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Reflecting on capabilities and interactions
between designers and local producers
through the materiality of the rubber from the Amazon rainforest

Flavia Regina da Motta Amadeu

A thesis submitted for the **University of the Arts London**
in partial fulfilment of the degree of

DOCTOR IN PHILOSOPHY

Centre for Sustainable Fashion
London College of Fashion

October 2015

Reflecting on capabilities and interactions
between designers and local producers
through the materiality of the rubber from the Amazon rainforest

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Abstract

Designers have recently become increasingly involved with small-scale producer communities around the world, mostly in the southern hemisphere, and this increase has highlighted the significance of these encounters in the creation of economic and social opportunities for those peoples. This study identifies that, however, these encounters present challenges and imply ethical responsibilities that current design methodologies fail to embrace in their long-term goals. This research investigates the interaction between designers visiting local producers whose livelihood is deeply dependent not just on the natural environment and their local culture but also on the process of fabrication.

This thesis proposes a new methodology to guide designers and producers through a reflective process of social change in producer communities. This methodology derives from a combination of activity theory and the capability approach to wellbeing applied within design and producer community practices. The aim is to support a dialogical and holistic design approach to this kind of cooperation, as well as to endorse research and professional practice in the field of design for social change. This research seeks to break new ground by generating perspectives that support both designers and local producers in tackling and resolving issues of individual and collective wellbeing.

The research draws on interviews with designers working with local producers in different countries. In addition, the author presents her own experiences of researching and working with Amazon rainforest rubber-tapping communities which have adopted new production methods in order to acquire new capabilities and help conserve their environment. Two case studies illustrate the reflective methodology applied to the designer and producer interactions within social innovation and entrepreneurship. But it is fundamentally the materiality of the rubber, and the revelation of the interdependences within and without the locality, that form the framework of this thesis.

Keywords

Activity Theory, Amazon rainforest, artefacts, artefact mediation, boundary object, capabilities, design and crafts, design for social change, design for sustainability, design management, design research, environmental sustainability, extractive reserves, handcrafts, local community, materiality, productive conservation, reflective thinking, small-scale producers, social entrepreneurship, social innovation, rubber, wellbeing.

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Flavia Amadeu

Preface

The first time I met the LATEQ chemistry laboratory team at the University of Brasília (UnB) was in February 2004, when they introduced to me the form of coloured rubber called FSA – *Folha Semi-Artefato*. It was a new material, which at that point had not had many applications. I spent the following six months working daily in the laboratory to help develop an art installation (exhibited at *Emo.Art*, Itaú Cultural, São Paulo, October 2004). During that period I learnt about the FSA production process and had the opportunity to test the material in different ways.

The partnership with LATEQ has evolved to a broader network comprising communities, institutions and individuals; the material itself has been improved, and some rubber-tapping communities in the Amazon rainforest have begun to produce coloured rubber sheets and rubber artefacts. I was lucky enough to be able to observe how the simple technology of processing natural rubber *in situ* began to generate opportunities for local producers, who found themselves talented artisans. The motivations leading to this research arose from my involvement in this process and my desire to give further support to such producers and artisans both in this context and elsewhere around the world.

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Table 8.2: Roles of the designer 321

Institutions

Acronym	Name	Website
CSM	Centre for Sustainable Fashion	http://sustainable-fashion.com
ICMBio	<i>Instituto Chico Mendes de Conservação da Biodiversidade</i> (Chico Mendes Institute for the Conservation of the Biodiversity)	http://www.icmbio.gov.br
IDEO	IDEO Design and Innovation Consulting Firm	http://www.ideo.com/uk
LATEQ	<i>Laboratório de Tecnologia Química</i> (Chemistry Laboratory of Technology)	http://www.iq.unb.br/
LCF	London College of Fashion	http://www.arts.ac.uk/fashion/
Mercur	Mercur	http://www.mercur.com.br/
Nesta	Nesta	http://www.nesta.org.uk
OECD	Organisation for Economic Co-operation and Development	http://www.oecdbetterlifeindex.org/
Piola	Piola Shoes	http://www.piola.fr/en/
<i>Poloprobio</i>	<i>Pólo de Proteção da Biodiversidade e Uso Sustentável dos Recursos Naturais</i> (Institute for the preservation of biodiversity and sustainable use of the natural resources)	http://www.poloprobio.org.br/
SEBRAE	<i>Serviço Brasileiro de Apoio às Micro e Pequenas Empresas</i> (Brazilian Supporting Service for Micro and Small Bussiness)	http://www.sebrae.com.br/
SRR	<i>Sky Rainforest Rescue</i>	https://rainforestrescue.sky.com/
TECBOR Project	<i>Tecnologias para a produção de borracha e artefatos de borracha da Amazônia</i> (Technology for the Rubber Production and Rubber Artefacts from the Amazon Rainforest)	N/A
UnB	<i>Universidade de Brasília</i> (University of Brasilia)	http://www.unb.br/
Veja	Veja Shoes	http://www.veja-store.com/en/
WFTO	World Fair Trade Organisation	http://wfto.com/
WWF-Brasil	World Wildlife Fund - Brasil	http://www.wwf.org.br/
WWF-UK	World Wildlife Fund - UK	http://www.wwf.org.uk/

Glossary

Artisan producers	I employ this term throughout this thesis in order to refer both to producers of materials and to artisans, whether traditional or non-traditional.
<i>Açaí</i>	Purple berry known for its health-giving properties. It grows on palm trees deep in the Amazon rainforest.
CVP – <i>Cernambi Virgem Prensado</i>	Type of commodity rubber that results from the coagulation of the latex. It needs to be processed by a milling plant prior to industrial production.
FDL - <i>Folha de Defumação Líquida</i>	Non-vulcanised type of rubber sheet (liquid smoked rubber sheet) produced in the Amazon rainforest for industrial purposes. This process dispenses with the need for milling plants.
FSA – <i>Folha Semi-Artefato</i>	Coloured <i>and vulcanised</i> rubber sheet (semi-artifact rubber sheet), ready to be employed in design and handcrafted products.
GEB	Brazilian Dark Granulated: a type of commodity rubber for industrial purposes.
Gross National Product (GNP)	A measure of the wealth of a country using the total value of goods and services produced in it in a year, plus the income earned by its citizens that are resident both in that country and elsewhere.
<i>Hevea brasiliensis</i>	Rubber tree (aka Pará rubber tree, <i>seringa</i> or <i>seringueira</i>).
Latex	Sap of the rubber tree that becomes rubber.
Materiality	Materiality concerns the transformation of materials and artefacts through human interaction and subjectivity/imagination (Ingold, 2011).
Metadesign	Metadesign is an open approach to design, based on dialogue and collaboration between diverse knowledge and practices, which aims to be generative in its process in order to deal with complex contexts and systems (<i>The Journal of Co-design</i> , 2010; Pangaro, 2010; Parsons, 2009; Wood, 2007; Giaccardi, 2006; 2005).
<i>Pela</i>	Type of smoked rubber produced in the Amazon rainforest.
Production unit	Shed to be used for the production of rubber sheets (FDL and FSA), proposed by TECBOR/LATEQ/UnB.
Productive conservation	Economic activities based on products sustainably sourced in the rainforest, e.g.: rubber, fish, assai, Brazil nuts and a range of valuable seeds.
<i>Reais</i>	Brazilian currency (R\$).
<i>Reserva extrativista</i> [trad. Extractive Reserve]	Forest reserves in which productive conservation takes place in the Amazon rainforest.
<i>Seringa</i> or <i>seringueira</i>	Portuguese for <i>Hevea brasiliensis</i> .
<i>Seringueiro</i>	Portuguese for rubber tapper.

Social capital	‘The ability of people to work together for common purposes in groups and organisations’ (Thompson <i>et al.</i> , 2000: 330).
Social context	Physical and social setting; the social environment of a community or neighbourhood; group of people and institutions that interact.
Social entrepreneurship	Practices for social change combining business models with altruistic approaches.
Social innovation	New practices, methods or strategies with social means and ends.
<i>Symbiosis</i>	Mutual and beneficial relationship between unlike organisms or biological beings living in close physical association. This idea has also been used to define the interaction between people or groups (Merriam-Webster, 2013).
Symbolic value	Resources and values related to recognition, prestige and honour.
TEA	Rubberised textile, the result of coating textile with liquid layers of prepared latex.
Vulcanisation	The processing of latex into vulcanised rubber by adding sulphur and zinc oxide to the latex; this stabilises the material, improving its elasticity, resilience, resistance, hardness and malleability.

1 Introduction

In the Amazon rainforest, rubber trees grow extensively in the wild, and what might seem at first sight to be a simple, ordinary natural material, a useful resource serendipitously available to local residents, in fact opens up a vast and complex system of relations between local producers and the global market. This scenario embraces both an ecological and a technological spectrum, reflecting on social and environmental sustainability.

Natural rubber has become an essential component of the industry that has transformed this plastic and resilient yet durable material into an important element in the manufacture of all kinds of products, from elastic bands to condoms, from shoe soles to car and bicycle tyres. This material is still an indispensable component of our contemporaneity. However, the direct interaction of designers within local rubber-tapping communities in the Amazon rainforest is a recent phenomenon relating to efforts made in Brazil to encourage social change and environmental preservation characterised as social innovation (Note 1.1).

Note 1.1

Social innovation

Initiatives and processes that innovate by proposing new methods, strategies or behaviour in order to promote social change and wellbeing. They can be developed by individuals and groups or by the private or public sectors (Manzini, 2015; Dees and Anderson, 2006).

In this situation, the designer becomes, even if only temporarily, embedded in the people's work and life routines. The collaboration between designers and artisan producers (Note 1.2) could be related to the viability of the local products and materials in a wider market; the collaboration on the development of new products using local material and cultural resources; the support to the implementation of new methods and production processes; the sharing of knowledge, techniques and practices; the intention of designers and companies to understand producers and production deeply in order to work closer to them warranting an ethical approach. By doing in this way, there is the possibility of not just placing an exclusive product in the market, but rather, the intention of preserving natural resources, revitalizing local crafts, and bringing further recognition to the artisan producers and contribute to further income generation and social inclusion of women and other minorities.

Note 1.2:

Artisan producers

This term, which is also used by Littrell and Dickson (2010), will be employed throughout this thesis in order to refer to producers of materials and to artisans, whether traditional or non-traditional. Either their roles are not separated, as the producer may be also an artisan, or the content of the text applies equally to artisans and producers without any clear distinction. For example, they may be producers of raw materials (e.g.: natural fibres, natural rubber, or cotton), or artisans who work with handcrafts (e.g.: embroidery, lace making and weaving) or a combination of both. Thereby, the use of the term encompasses the work of both artisans and producers in connection with local culture and/or natural resources.

This study brings a real-life phenomenon of social innovation, in which creativity and natural husbandry are part of a complex sociocultural, political and environmental scenario in transformation. This study has been developed in my fieldwork in the Amazon rainforest; my experience there allowed me to carry out an analysis of the

processes and implications of professional designers working with producers and artisans within the challenges and opportunities of their context.

This research proposes that the approach of the professional designer towards the producer community should feature a methodology that encourages reflection on the part of both designers and producers. It also aims to guide designers both in the preparation of their interactions, and during and after them, within the community context. This reflective methodology aims to serve as a tool to promote further learning and aid the enhancement of capabilities (Note 1.3), with positive impacts on personal and collective wellbeing. Therefore, this methodology sets out perspectives for a holistic understanding of both the context and the interactions.

Note 1.3

Capabilities

Amartya Sen (1999) proposes the capability approach to individual and social development. Capabilities relate to peoples capacity, means and freedom of choice to be and realise what they value. The capability approach considers the assets, both material and immaterial, that are needed in order to enable people to live in accordance with their values and choices.

1.1 General context

The increasing involvement of designers within the producer community (Note 1.4) is a fact that has become evident in design literature, education and professional environment. Evidence suggests that the success of such an approach is in part contingent on effective dialogue and collaboration between designers and producers.

However, there are many other factors that appear to influence activities aimed at promoting social change and wellbeing. The complexity and nuances of this process deserve analysis and understanding in order to be further developed, improved and articulated.

Note 1.4

Producer community

The social environment of a community or neighbourhood sharing a common productive activity.

1.2 Research problem

Designers, in a wide range of industry sectors, including fashion, consumer products, graphic design, service design and architecture, have worked within the context of a producer community through projects, businesses, consultancies, research and entrepreneurship, either individually or in combination. Their agendas vary from collaborating on the creative and technical development of products to supporting the assimilation of new methods of production.

Projects in social innovation and social entrepreneurship have effectively promoted the involvement of designers with local artisan producers and their community. This has become one of the core issues of the current discussions in the field of design for sustainability. This growing approach isn't just another design and fashion trend; it addresses the integration of ethical practices within production modes that concern

the way people live, consume, and relate to each other and to the natural environment.

Although opportunities have emerged from the encounters between designers and artisan producers, examples exist where problems have compromised not just expectations, but also the continuation of projects and processes that could have promoted long-term benefits (Borges, 2012; Reijonen, 2010). It is suggested that there is still a need for critical reflection upon this process and that current design methods have been short-term oriented.

Part of the problem is that design methods are in general action-oriented and focused on short-term results. Dutch designer Ilse Oosterlaken argues that in social design approaches 'ethical and social dilemmas are to be expected' (Oosterlaken, 2009: 101). Brazilian design and crafts curator Adélia Borges argues that the encounter between designers and artisan producers has been widely celebrated but barely analysed (Borges, 2012: 138-139). Both Oosterlaken (2009: 100) and Borges (2012: 138-139) argue that participatory design methods do not usually meet social expectations because they focus on the immediate objectives of a particular project instead of empowering people to improve their lives. It is not just that results of the interactions are often considered in terms only of immediate achievements, but also the concomitant work processes and impacts which evolve throughout time are rarely documented or analysed.

Research methods derived from social sciences, such as observation, documentation, ethnography, field diaries and action research, have been relevant tools for design research within the community context (Chick and Micklethwaite, 2011: 24; Murray *et al.*, 2010: 20). However, current research methods do not appear to engender understandings of the design processes in social innovation, which encompass relationships between the people, their production methods and their artefacts. This complexity needs to be taken into consideration in order to enable further theoretical and empirical understanding of the process of designing and the particular circumstances that may contribute to long-term transformation in individual and collective wellbeing. Scottish design activist Ian Grout (2013), in his paper *Resilience in a Convivial Society*, reflects upon how designers can work within a 'society in transformation', which 'by nature, require a re-definition of the context in which design takes place and a reconstruction of the skills and attitudes of those designers working in such domain' (Grout, 2013).

1.3 Research questions

The involvement of designers within the producer community has become an important feature of social change. Evidence demonstrates, however, that the comprehension of this process is still embryonic. The research questions were therefore framed thus:

- i) How could an interaction between designer and local producers be holistically understood in its process and implications?

- ii) How could this encounter between designer and local producers contribute to enhance individual and collective wellbeing?
- iii) How can designers, who work with local small-scale producers and artisans analyse their practices aiming at social change and sustainability?

The research questions asked about the engagement of designers within producer community, with the aim of supporting local wellbeing. The research questions directed this study towards an investigation about the elements, phases and implications of this process of collaboration. In this framework of interaction between the designer and the artisan producer, three aspects are taken into account:

- i) The context of production and interaction between designer and artisan producers;
- ii) Individual and collective transformations throughout this process.
- iii) The process of collaboration with the producer community, and the implications of the interaction over a period of time;

These general questions generate reflection into how a designer and artisan producer collaboration can evolve towards wellbeing and social change.

1.4 Rationale

The nurturing of small-scale productions and economies has been recognised as a way of tackling macro social and environmental problems that have affected the whole planet since the late 1960s (Vezolli and Manzini, 2008; Papanek, 1971; Schumacher, 1973). The involvement of designers with local communities within the framework of social and environmental sustainability appears to have grown dramatically from the 1990s to date, as exemplified by several authors (Manzini, 2015; Black, 2013; Borges, 2012; Martin and Osberg, 2007; Black, 2008). This involvement highlights a change in design practice from a market-oriented approach to a human-centred one (Margolin and Margolin, 2002), which integrates the social, economic, cultural and environmental values of those who manufacture materials and goods. It has also brought recognition of local materials, techniques and handcrafts often at risk of disappearance (Fletcher, 2013; Borges, 2012).

The answer to the research questions posed in the section above requires a methodology; one that can support systematic and holistic reflection upon the collaborative process. Thackara (2005) suggests that the involvement of designers within complex social contexts is highly situational, however he postulates that designers should develop an acute awareness of the events and situations in the places where they practise. Yet it is difficult for anyone to describe the nuances and implications of their practices with the producer community.

In order to address the research questions, I suggested the development of a reflective methodology in order to guide the designer through a collaborative approach to reflective thinking throughout their practice within the local community. For the composition of this new reflective methodology I combined the theory of capabilities developed by economist Amartya Sen (1999) and Activity Theory (AT) as further developed by Yrjö Engeström (2005; 2001; 1999). The theory of capabilities is a philosophical and practical approach to achieving and understanding wellbeing, which is related to the set of conditions that enable people to realise their objectives and live according to their cultures and values. It considers both material and immaterial aspects as factors that influence people's capabilities and their realization (Nussbaum, 2011; Frediani, 2008; 2007; Sen, 1999). While some of its aspects can be measured and easily observed, others evolve through time and are subjective.

The theory of capabilities (Sen, 1999) is an approach to wellbeing which gives a sense of purpose to the social practitioner by highlighting the designer's sensitivity to people and locality and by providing a rationale for social change. There still remains, however, the question of how capabilities can be perceived in a particular context. Therefore further capabilities can be developed. How can the designer and the artisan producer learn from the collaborative process, thus aiding the achievement of further capabilities?

Activity Theory (Engeström, 2005; 2001; 1999) proposes a systematization of complex interactions between practices and networks (activity systems), where the artefact is a central mediator of dialogue and collaboration. Reflecting upon these kinds of

interaction between different actors, elements and activities enables a learning process to develop. Activity Theory provides a meta-theory for a deeper analysis of the context and the intersection between practices and networks, which is seen as a learning process. Activity Theory suits a design analysis of the processes of interaction, as the artefacts motivate and mediate the relationships. In this framework, the participants and the context are transformed through the process of social innovation as artefacts are.

The reflective methodology is derived from both these theories in addition to principles of design for social change in order to guide the designer in their approach, documentation and analysis of processes within local communities. The two theories are action-oriented and can complement each other in a contribution to the design field. While the concept of capabilities provides an ethos of the social practice, Activity Theory proposes a systematic reflective practice.

The combination of these theories forms a novel reflective methodology, the aim of which is to serve as a guideline for professional designers, design researchers and design students in their approaches. It aims to increase designer and artisan producers' learning through reflecting upon material and immaterial aspects within the transformative process catalysed by technological and social changes.

1.5 Specifics of the research

The specificity of this research is developed from a cultural-historical study to which I draw evidence from my personal experience and observations working with artisan producers in the Amazon rainforest. An ongoing process of social innovation has occurred through the materiality of wild rubber which has been transformed into handcrafts and design products. Social innovation is foregrounded through the adoption of new methods of production by rubber-tapping communities. Within this context, the emergence of crafts has been highlighted. The creative integration of new methods of processing the natural rubber collected inside the rainforest into coloured rubber sheets and rubber artefacts is seen in this thesis as a way of expanding individual and collective capabilities. I specifically explore the coloured rubber (Folha Semi-Artefact - FSA), which is a new rubber that not only provides a better economic return but also has promoted the emergence of handcrafts among producers. Thus, the interplay between economic gain and community benefit becomes part of the consideration.

Questions to the specificity of this approach, related to the main research questions, are as follows:

- i) What is the significance of the materiality of the wild rubber?
- ii) Can further development of rubber artefacts, according to new methods of production, contribute to wellbeing of local communities in the preservation of the Amazon rainforest?
- iii) What is the relevance of design in this process?

These questions are no less important than the general questions. They place into a contextual examination the significance of the materiality of the rubber for social and environmental sustainability in the Amazon rainforest. They also ask about the significance of design and the role of designer within this context, where new materials and artefacts are created and produced.

My interaction within this context of rubber-tapping communities then is brought to reflective thinking, as proposed by the reflective methodology suggested in this thesis (Chapter 5), testing its application to both a case study of design research (Case Study 1 – Chapter 6) and a case study of professional practice (Case Study 2 – Chapter 7).

1.6 Research proposition

This research is intended to stimulate reflection upon the interaction between designers and small-scale artisan producers within the producer community in order to promote opportunities that contribute to individual and community wellbeing.

1.6.1 Research aims

In order to explore the implications and nuances of design practice within the producer community, the research has four main aims:

- i) To investigate the involvement of designers in the context of local small-scale artisan producers;

- ii) To discuss a design approach to wellbeing;
- iii) To scrutinise the roles of the designer when working with local artisan producers;
- iv) To develop guidance for the analysis of the context, the process of interaction and beyond.

1.6.2 Research Objectives

The research aims are investigated and supported throughout the thesis by drawing on my research and work practice with rubber-tapping communities in the Amazon rainforest and identifying specific objectives for this work:

- i) To examine the meaning of sustainability for the local populations surrounded by the natural environment of the rainforest;
- ii) To examine the phenomenon of social change through new methods of rubber production among these communities;
- iii) To develop an analysis from my interaction in this context according to the methodological guidelines developed in the thesis;
- iv) To reflect upon the designer's roles from the lived experience and analysis.

1.7 Research Methodology

This study is concerned with the integrity of the livelihoods of local populations and of the biomes of the world. This approach goes beyond disciplinary boundaries, embedding anthropological, sociological and ecological concerns. This thesis results from dynamic exchanges between conceptual, methodological and practical

approaches as described in the previous sections. The qualitative research methods used throughout this thesis attempt to bring to the fore the understanding of design as a multidimensional practice, in order to be able to tackle social and environmental issues.

1.7.1 Dialogue between practice and theory

This thesis has evolved from the materiality of the rubber, which provides the context for the practice and theory of this study. My research, work, and overall collaborative practice with artisan producers from rubber-tapping communities in the Amazon rainforest have informed this research – pivotal for this study, as it provides the problems addressed by the investigation and also informs the theory.

This research is considered practice-informed, as the practical process of working with artisan producers reinforced my concern about the need for further methodology. The application of the methodology occurred in a post-rationalization of the case studies, as discussed in Chapter 5. In this way, the practice became instrumental to test and improve the reflective methodology (Chapters 6, 7 and 8).

1.7.2 Literature

Although the disciplinary character of this thesis is located within design, the fact that the context is one of social change and sustainability underpins a range of levels, including social and environmental, of realities and complexity. This complexity thus requires a more interdisciplinary and transdisciplinary approach. According to Chilean

economist Max-Neef, it is transdisciplinary research and action that are necessary in order to tackle social problems (1991: 23). Max-Neef and New Zealand architect Mark Burry consider design as one of the disciplines able to coordinate different disciplines and practices. Burry (2010: 24) insists that a transdisciplinary approach in design is the most appropriate mechanism for enriching participation and human experience both ethically and responsibly. A transversal approach that create a nexus between the different elements related to design practice for sustainability within the producer community's context, the literature was gathered from disciplines other than design, such as social sciences, economics and business.

1.7.3 Case Studies

Case Study 1 (Chapter 6) comprised a field research that occurred between 11th and 18th December 2011 in which I was engaged in the production process of rubber and rubber handcrafts as participant observer and collaborator. Case Study 2 (Chapter 7) was a professional experience in 2012, in which I managed and developed a design project, working with a rubber-tapping community on two occasions (from 5th to 11th November and from 26th November to 1st December). In this project I engaged with the community to help implement the production of coloured rubber sheets.

A field diary, open interviews and audio-visual materials were the main methods of documentation. The field diary was a fundamental tool to bring a sense of the personal into, and reflection upon, the practice. A new set of three interviews with one artisan producer of Case Study 1 (Chapter 6) and two stakeholders of Case Study 2 (Chapter 7)

was realised between 2013 and 2014 with the aim of reassessing the experience of producers and stakeholders, besides providing updated information about the context. A range of published articles, interviews, brochures and videos resulted from Case Study 2, which are referenced in Chapter 7 as appropriate.

During the interaction with the artisan producers I made use of cultural probes. This method proposed by Gaver, Dunne and Pacenti (1999: 29) aims to stimulate the sharing of personal experiences and dialogue through photos, notes, maps and drawings, among others. In the examples used in this thesis, photos and notes were important cultural probes, enabling us to learn more about each other's culture, personalities, working routines and the day-to-day socialization (Chapter 7); they were integral in the process of interaction. Cultural probes have been used as a generative and responsive tool for design research (Gaver et al., 1999: 29); they stimulate perception and reflection upon context and processes.

1.7.4 Post-rationalization of case studies

Two phases of fieldwork were conducted in response to the initial research questions concerning the contribution of design in the expansion of wellbeing and sustainability of rubber-tapping communities in the Amazon rainforest (Chapter 6). The outcomes included the realization that existing approaches were insufficient to develop a holistic understanding of the interaction between the designer and the artisan producers whose productive activity occurs within complex interdependences between

economic, environmental, and socio-cultural aspects; this then led to the development of a new methodology.

Research and professional experiences with two discrete communities of rubber producers motivated and informed the development of the reflective methodology. The methodological challenge was also observed in other contexts through subsequent investigation.

The development of the reflective methodology was therefore applied to a post-rationalization of both case studies. This process was instrumental to both improving the configuration of the methodology and achieving a more holistic analysis of the case studies, which provided a number of further insights and findings not previously observed.

1.7.5 Semi-structured interviews

I ran eight semi-structured interviews with fashion designers who have been working with local communities in different parts of the world. The interviews in Chapter 4 look at how designers perceived the processes and outcomes of their practices with local producers. I questioned motivations, the actual process of working together with the artisans or producers, and the challenges and the outcomes for the participants, both to the producers and to the designers. Although there was a basic script for these interviews, the questions were open in order to allow each designer to reflect upon their own experiences.

Semi-structured and unstructured interviews were also made with artisan producers from the rainforest and with other stakeholders related to those communities. These interviews were used as a way of reassessing the experiences, and are included in Chapters 6, and 7.

Note 1.5

Interviews

The voices of the interviewees differentiate from habitual bibliographical quotation through a contrasting font type. See example below:

Interviewee's voice will be quoted in this format.

1.8 Ethics of the research

During this research I interacted with many people who contributed to the development of this thesis. The research methodology above describes the ways these interactions occurred. Throughout this process, issues of ethics were considered, including anonymity, privacy and public domain.

The ethics of the research was monitored by the University of the Arts Research Ethics Committee and previously by Plymouth University. Following guidelines approved by the University of the Arts, interviews with participants were authorized through a signed consent form or, in any case of illiteracy, audio recorded consent.

Concerns for anonymity or for authorship were respectfully taken into consideration; most of the interviewees made it clear they would prefer to be given recognition for their creative practices or research. Some of them kindly provided photos and informative materials, besides their websites to which I could refer. I made the decision to refer to some community members by their given names because these names are very common in Brazil, and even within the same community many have the same name. Thus, I considered that the confidentiality of the interviews was not affected. By using the given names, the personal character of the narratives could be maintained.

In terms of privacy, no material that could identify participants, including personal details, is part of this document. The issue of public domain comes across in Chapter 7, which refers to a professional experience within a rubber community in the Amazon rainforest. A range of publications resulted from the project of Case Study 2 and most of these are available online. Lastly, I would like to state my profound gratitude towards all the participants involved in this research.

1.9 Research structure

The first part comprises the theoretical and practical contexts in which this study sits; first it contains the literature review, in which the design approach to community contexts of small-scale producers is discussed within the issue of wellbeing. It also draws on interviews with designers in order to further understand this approach. Chapter 5 proceeds by proposing the development of a methodology for reflective

thinking about the process, contexts and interactions within this process. Chapters 6 and 7 apply the suggested reflective methodology. These applications are then analysed in Chapter 8, which also discusses findings and insights that emerged from Case Studies 1 and 2 in Chapters 6 and 7 respectively. Chapter 9 concludes the thesis. The research structure is presented visually in Figure 1.1., which is followed by the outline of the thesis.

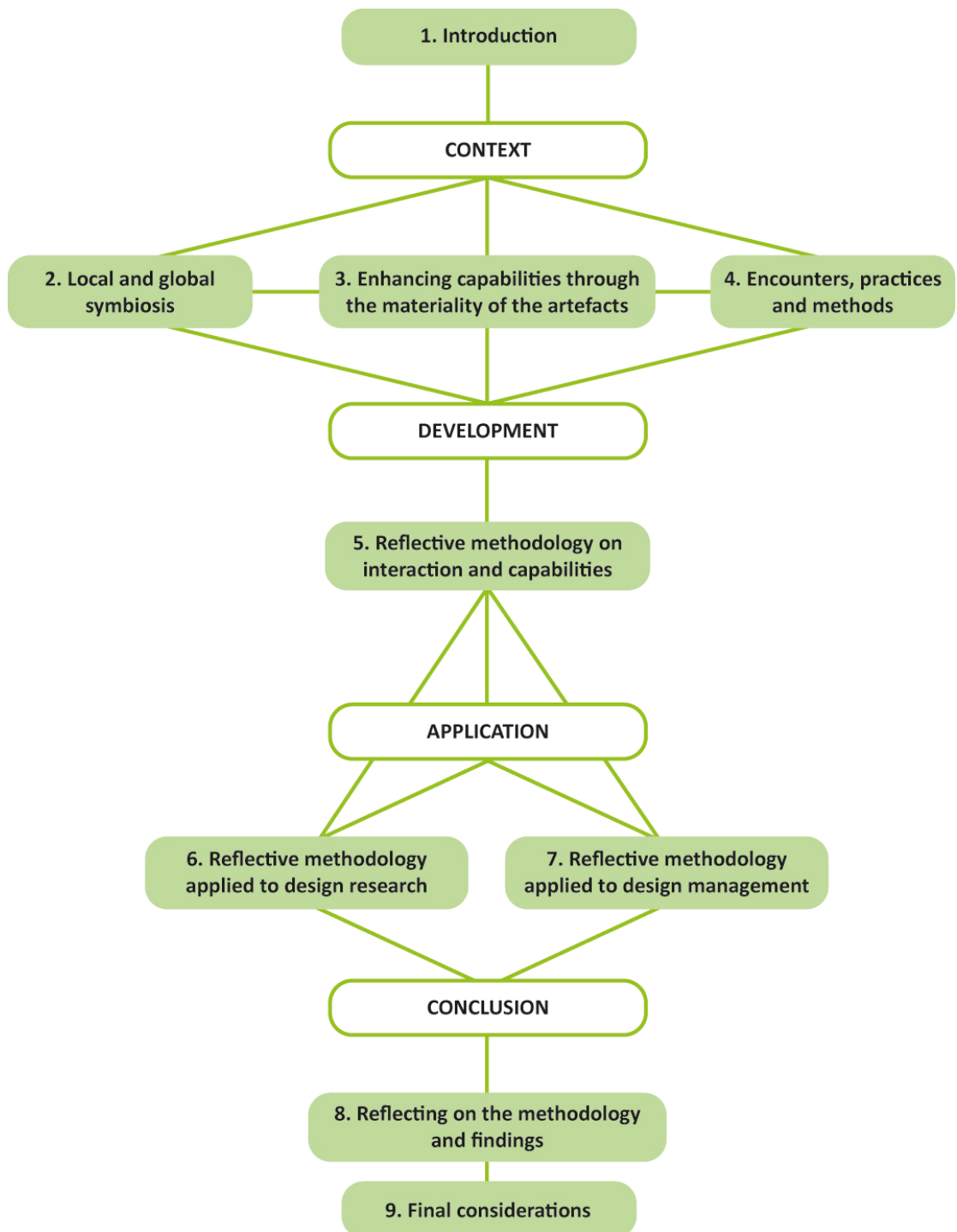


Figure 1.1: Thesis structure

1.9.1 Outline of the thesis

CHAPTER 1: Introduction

This introduction sets out the problem of the thesis: while professional designers have been participating in processes working towards social change and sustainability, there is still in design a lack of theory and methodology that is able to support a deeper understanding of the complexities and implications of the interactions that involve community contexts and an extended network of relations. This study suggests a methodology to guide reflection by designers and artisan producers. In doing that, it aims to contribute to the identification and creation of opportunities for individual and collective wellbeing. The methodology also aims to support work and research practice. I draw evidence from two case studies of my experience in the Amazon rainforest for an application of the reflective methodology. In doing that, I examine the process of social innovation in the Amazon rainforest, a phenomenon which unfolds from the materiality of the natural rubber.

CHAPTER 2: Local and global symbiosis: materiality and ecology of the rubber from the Amazon rainforest

This research is placed within the specific Amazonian rubber-tapping context. By exploring the materiality and the ecology of the rubber, it is possible to form a holistic view of the multiple connections that create the networks within and without the rainforest, and between them. Transformations and the transport of this material throughout history up to present day gives signs of the interdependence and

interlacing of the local communities and global markets, which imply social, political and environmental complications. These two-way flows of influence and pressure between the local and the global have defined the formation of communities with a shared identity linked to the material. This scenario demonstrates how sustainability is a complex and overarching issue combating stagnation, and cannot be reduced to a series of isolated actions. This chapter provides an account of initiatives of social innovation.

CHAPTER 3: Enhancing capabilities through the materiality of the artefacts

This chapter contemplates the philosophical and practical ethos of capabilities. This action-oriented theory is catalysed by people's proactive engagement in creating opportunities and generating social values. Creative exploration of the materiality of the rubber demonstrates how social innovation also emerges from individuals and communities in the Amazon rainforest, giving signs of self-reinvention through handicrafts. In this scenario, design also becomes relevant. This context begins to discuss interactions between designer and artisan producers on entailed opportunities and challenges.

CHAPTER 4: Encounters, practices and methods

This chapter examines the interaction of designers with local artisan producers by presenting evidence from interviews with eight designers and/or social entrepreneurs about their experiences with artisan producers and their communities in different

parts of the world. By looking at the issues of difference, and the challenges and opportunities of the collaborative practice within the community context, this chapter attempts to establish whether capabilities can be enhanced. It also intends to provide an understanding of the significance of design and the roles of the designer working with local artisan producers – with the intention of contributing to social change and wellbeing. Further, it investigates methods employed by designers in their work with small-scale artisan producers.

CHAPTER 5: Reflective methodology on interaction and capabilities

In response to the research question, this chapter proposes a new methodology in order to promote better and deeper understanding of interaction between designers and artisan producers within the community. The reflective methodology aims to contribute to enhance individual and collective capabilities. The reflective methodology combines Activity Theory (Engeström, 2001) and the theory of capabilities (Sen, 1999). A phenomenological perspective is brought to the discussion of the written reflection of the designer.

CHAPTER 6: Reflective methodology applied to design research

This chapter applies the reflective methodology to Case Study 1. It comprises a reflection upon my experience in field research as participant observer and collaborator. By applying the reflective methodology in a post-rationalization of the case study, I was able to test and improve that methodology. The artisan producer

who has developed rubber shoes is an example of a bottom-up social innovation, illustrating the theory of Chapter 2 and providing a closer approach to this challenging phenomenon in the Amazon rainforest, as introduced in Chapter 2. Through the reflective methodology, I reflect upon the context, the research experience and its consequences over a period of time.

CHAPTER 7: Reflective methodology applied to design management

Case Study 2 brings my professional experience to reflection. The fieldwork occurred within another community in the Amazon rainforest. In this, I worked for the implementation of a new method of production and the development of a design work to simultaneously support production and promote it. The application of the reflective methodology led me to reflect upon the enhancement of capabilities by the multiple stakeholders involved in efforts and disseminating social innovation.

CHAPTER 8: Reflecting on the methodology and findings

The application of the reflective methodology in the two case studies proves its utility for use within different situations. The chapter examines findings about and insights into the use of the reflective methodology. This chapter also discusses the roles of the designer from these experiences and examines findings emerging from analysis of the case studies through the reflective methodology. An important finding concerns the function of the rubber as a pivotal boundary object in the process of social innovation of local communities in the Amazon rainforest. Through this understanding, this

material connects communities from within and without the rainforest, forming a complex network of relations.

CHAPTER 9: Final considerations

This concluding chapter discusses key features and findings of this research. It reviews the key contribution, brings evidence of originality, discusses the limitations of the research, points towards future researches, and suggests some further applications for the reflective methodology.

1.10 Contribution to knowledge

The primary contribution of this research is the formulation of a reflective methodology. That methodology consists of a tool to guide and support the designer and artisan producers in their reflection upon practice, wellbeing and social change with regard to their context. It also supports the professional designer through documentation and reflection upon practices that occur in field research and fieldwork within the community context. It innovates by combining Activity Theory and the Theory of Capabilities. This new reflective methodology consists of a meta-theory that generates a more holistic, more system-related understanding of complex processes and interplays for social change and sustainability.

The application of Activity Theory (AT) (Engeström, 2005; 2001; 1999) *per se* would already be an original contribution to the design field. Nonetheless, I propose the

composition of a new methodology that combines the learning theory of AT with the ethos of capabilities (Sen, 1999). The reflective methodology aims to promote active learning by conducting codification of and reflection upon the practice both while it occurs and afterwards. In this way it is expected that insights into both the context of approach and the design practice for social change and sustainability make a contribution to practical and theoretical knowledge, consequently improving the performance of designers in this field.

The micro-level contribution refers to the specific context of rubber-tapping communities in the Amazon rainforest with regard to current social change, which is led by the materiality of the rubber produced locally and transformed into artefacts by design, crafts and industry. The material embeds a wider ecology that brings to light the multiple connections from within and without the rainforest. This relationship impacts on the social and environmental configuration of local populations and the rainforest, which in turn has global implications on the life, quality of air and natural resources of the planet.

Collaborations between designers and artisan producers have occurred within this context as part of social innovation processes amongst communities. The contribution arising from this is the documentation of an existing process, the reflection upon the designer and artisan producers' interactions and upon the complexity posed by the issues of social innovation and sustainability. It demonstrates that the artefacts have a predominant role in the interactions of the world and in its configuration. Thus the

artefacts are considered mediators, as in AT, of the interactions between the designer and the artisan producers.

These two key contributions come together in this research through the application of the suggested reflective methodology on the case studies drawn from my experience interacting with artisans and producers from the Amazon rainforest. Although the application of the reflective methodology draws from my own practice, it is a circumstantial tool which was designed to guide designers through their field researches and fieldworks within the context of a community. In summary, the reflective methodology is independent of the context of analysis, but its application in this context in fact generated a comprehensive analysis of the community's work and of my practice.

This study seeks a deeper understanding of the professional design practice within the community context in order to promote and support the production, products and producers. It aims to increase the designer's awareness of and sensitivity to the social contexts in which he or she engages, and of the intricate processes and the implications that the interaction between designer and artisan producer generate for the individual, communities and network of relations.

1.11 Thesis readership

The primary readership of this thesis is intended to be professional designers and design students in different areas, such as fashion, product and graphic design,

focusing on relational processes with social aims. It is suggested that the reflective methodology should be applied by designers who embark on fieldwork for both field research and collaborative practice, with the aim of applying the methodology in a collaborative reflection with artisan producers and other community members. Above all, it is a learning tool that encourages reflection into the longer term, beyond artefacts and production processes.

1.12 Summary

This chapter provides the reader with a reminder of the research proposition, the objectives and the importance of this study in the area of social and environmental sustainability. It focuses on the interaction of designers and local artisan producers through social innovation projects and/or social entrepreneurship whose aim is to support social change in order to promote opportunities for more socio-economic, cultural and environmental sustainability. This study looks how these processes occur and also how they result in direct and indirect consequences for the local participants, the designer and the network that comprises the community and other actors involved. The implications and outcomes that emerge from the encounter between professional designers and artisan producers are multiple and therefore exceed the physical limits of the artefacts and pre-defined targets established in any individual project.

This study suggests a reflective methodology to guide reflection upon the nuances of the interaction between the designer and the producer community, including the

legacy of this process. The case studies of the rubber-tapping communities set a context of social innovation for sustainability and then provide content for the application of the methodology. This application tests the methodology, having implied its improvement. The aim is to contribute to the design of social practices by promoting further learning and understanding that may perhaps contribute to more positive approaches and more effective projects with long-term results.

The next chapter sets out the theoretical context of the thesis. It reflects upon the significance of design and the roles of the designer working for social change and sustainability within the context of local communities. It proposes the integration of the concept of capabilities by the designer as an ethos of their practices within community contexts.

2 Local and global symbiosis: materiality and ecology of the rubber from the Amazon rainforest

The word 'symbiosis' is defined as a mutual and beneficial relationship between unlike organisms or biological beings living in close physical association. This idea has also been used to define the interaction between people or groups (Merriam-Webster, 2013). It is the concept of symbiosis that motivates this chapter; the materiality of the rubber that originates from rubber trees spread around the Amazon rainforest brings to light a paradigmatic example of interdependence between local and global instances of a non-dualistic and interconnected world.



Figure 2.1: Relationship between local production and global market.

Left: a rubber tapper harvests the raw latex; a woman of the community hangs sheets of rubber to dry; a rubber shoe made by the artisan José de Araújo. Right: designer products made of new rubber materials, produced locally.

2.1 Introduction

The graphic above (Figure 2.1) represents the conceptual and contextual framework of this chapter. It summarizes the reflection of how social innovation can be pivotal to

social and environmental sustainability in the Amazon rainforest. Rubber, in this example, mediates and motivates the interactions between local small-scale artisanal productions and the global market, dominated as it is by mass production and being an integral part of urban lifestyles. Design and designers have been part of this process that entails social change and sustainability of the rainforest and its populations. This chapter moves from a focus on the materiality of the rubber to the complexity of this scenario, where tensions and challenges co-exist with new opportunities.

French philosopher Felix Guattari (2000) and Indian pacifist Satish Kumar (2012) share the sense of an interconnected and interdependent world. They both relate this to the understanding of the term 'sustainability'. Guattari (2000: 27–28) postulates the idea that an ethical-political articulation to deal with social and environmental crises should integrate three ecologies: the environment, social relations and human subjectivity. Similarly, Kumar (2012; 2013) presents 'Soil, Soul and Society' as a triad essential for a sustainable world, as it incorporates a holistic sense of integration of earth, human subjectivity and social relations. The livelihood of the local communities from the Amazon rainforest depends on the integration of these three dimensions and the viability of the economic trade of local products, such as rubber. The local production of natural rubber harvested from trees that grow wild in the Amazon rainforest, illustrates and problematizes local and global issues of sustainability.

2.2 The materiality of the rubber

Observe the objects around you, and think about a world without rubber, from elastic bands to condoms, from the soles of your shoes to the tyres of your car or bicycle. The material is so incorporated into our daily lives that we barely notice it. When the Europeans colonized the continent in the late fifteenth century, bouncing balls, wrappings for newborn babies, wound dressings, toys, shoes and bags were just some of the rubber artefacts made by the indigenous people in different parts of Central and South America. Native populations taught colonizers how to use the sap that seeps from the rubber tree trunks when they are tapped in order to waterproof clothes and shoes, and to make water bottles (Panel 2.1).

Panel 2.1: Pre-colonial uses of rubber



Figure 2.2: Rubber ball. The Mesoamericans developed a mixture that had a similar effect to the vulcanization process, so they could control the hardness, thickness and durability of the material. Other objects made of rubber produced by them were sandals, ornaments and statues. Figure 2.3: Native rock painting of the game played with rubber balls. Figure 2.4: European illustration of the game that ancient Central Americans used to play with rubber balls.

The materiality of rubber is linked to the transformations of this material through human imagination when forged into other materials, machine engines and essential products to the contemporary life style. According to Ingold (2011: 30), materials can tell 'condensed stories' which can unfold from their 'flow, mix and mutation'. By exploring the materiality of the rubber, a mesh of socio-economic, cultural, political and environmental issues unfold, providing significance and complexity to the debate of social innovation and sustainability.

The ecological, economic and social history of the Amazon rainforest is related to this material, which was responsible for the construction of cities and the formation of many non-indigenous populations as this chapter demonstrates. This material has been transformed and utilized since the industrial revolution, thus becoming an essential material in the history of design.



Figure 2.5: Indigenous rubber shoe dating from 1853. Some communities in the rainforest continue to produce this kind of shoe.



Figure 2.6: European 19th-century rubber bottle.

Panel 2.2: Studies on rubber



Figure 2.7: *Studies in Hevea*, R. E. Schultes, April, 1950. Kew Gardens' Botanic Collection, 2014.



Figure 2.8 (above): *Hevea Brasiliensis* seeds, 1829. Of the different species, it was the *Hevea Brasiliensis* that became the source of rubber due to its latex productivity, abundance of trees and quality of the material. These factors enabled the economic exploitation of this material. Kew Gardens' Botanic Collection, 2014.

2.2.1 Vulcanization

Rubber became integral to many kinds of object, from engineering tools and materials to garments and fabrics, as in waterproof clothes, wellington boots, shoes and swimming apparel (Bloor and Sinclair, 2004; Mossman, 2008; Pirovano, 1991) (Figure 2.9). The process of vulcanization is essential for these and many other uses; natural rubber needs to be combined with sulphur and zinc oxide in order to improve it and stabilize it, giving it long-term elasticity, resilience, resistance, hardness and malleability.



Figure 2.9: Common products containing natural rubber.

Rubber became one of the main materials of the industrial revolution due to research carried out by American enthusiast Charles Goodyear (Panel 2.3) and English inventor Thomas Hancock. Both are recognized for discovering how to stabilize the raw material, which in its pure constitution reacts to different temperatures, is breakable and is also perishable. Charles Goodyear became recognized as the first to discover this process, and dedicated his life to the material, having developed numerous studies and artefacts which were presented in many exhibitions of the Royal Academy in London and other venues during the industrial revolution. However, it was Thomas

Hancock who was the first to patent vulcanized rubber, in 1843, and he made a fortune from it. Hancock dominated this process, and developed machinery which allowed the industrial application of rubber and its recycling process. Another important figure was the Scottish chemist Charles Macintosh,¹ who studied and developed waterproof fabrics by coating textiles with rubber (Panel 2.4). He founded Macintosh and Co, and was of course the originator of macintosh raincoats (Loadman and James, 2010: xvi-xvii; Mossman, 2008: 57; Loadman, 2005; Sinclair and Bloor, 2004; Pirovano, 1990).² The investigations into natural rubber gave birth to inventions and material improvements in terms of comfort, safety, and mechanical functions, among others. Natural rubber is still an essential commodity for the industry, which is nowadays is often combined with synthetic rubber derived from petroleum.³

¹ Not to be confused with the designer Charles Mackintosh.

² As part of this research, on 11th November 2014, I visited Kew Gardens' Private Archive and Botanic Collection where I could see and photograph objects of historical value (Figures 2.5; 2.6; 2.7; 2.8 shown in the previous pages and 2.10; 2.11 and 2.12 below).

³ This combination is also notorious for its non-degradable character, demanding research into recycling and up-cycling processes.

Panel 2.3: Some of Charles Goodyear's rubber artefacts



Figure 2.10: Artefacts developed by Charles Goodyear when researching applications for rubber, 19th century. Kew Gardens' Private Archive, 2014.



Figure 2.11: Bracelet. Kew Gardens' Private Archive, 2014.

Panel 2.4: Macintosh



Figure 2.12: Macintosh rubber shoes, 1853. Europeans had learned in the Amazon how to waterproof their shoes by submerging them in latex. Macintosh, who patented waterproof raincoats, also researched the application of natural rubber in the development of shoes. This Macintosh shoe was on exhibition at Kew Gardens, London, 2014.



Figure 2.13: Illustration of a macintosh raincoat (Look and Learn, 2007).

Figure 2.14: Rubberized fabric (Macintosh & Co, 1853). Kew Gardens' Private Archive, 2014.

Figure 2.15: Classic macintosh raincoat (Cordings, 2015).

2.3 Sustainable development: global and local context

The only true response to the ecological crisis is on a global scale, provided that it brings about an authentic political, social and cultural revolution reshaping objectives of the production of material and immaterial assets. Therefore this revolution must not be exclusively concerned with visible relations of force on a grand scale, but will also take into account molecular domains of sensibility, intelligence and desire.
Guattari (2000: 28)

Debates on the future of the planet grew gradually from the 1970s, when worldwide concerns about food limitations and the overuse of natural resources began to question how rapidly humanity was destroying them. Simultaneously, a political movement began in the Amazon rainforest among traditional populations who sustained themselves on the rainforest products and resources; they claimed the right to use the rainforest, whose the preservation was fundamental to the continuation of their economic activities, but which was being invaded and devastated by big farmers. Led by rubber tappers, the movement of traditional producers caught the attention of international environmentalists and the media. At the same time, the term ‘sustainable development’ became a buzzword among environmentalists, politicians, and economists in the 1980s and 1990s. In 1987, the World Commission on Environment and Development, also known as the Brundtland Commission, declared that countries should cooperate in their efforts to attend to the needs of the present without compromising the ability of future generations to meet their own needs (WCED, 1987: 43). As a consequence of the local movement supported by the media, in the late 1980s the Brazilian government created protected areas for ‘productive conservation’, called Extractive Reserves (*Reservas Extrativistas*), legalizing the occupation of the rainforest by small producers who lived off the harvest of wild products, such as fish, seeds, fruit, natural oils and rubber (Gomes *et al.*, 2011). These

discussions were not directly interconnected, but reverberated with each other. The accelerated pace at which the earth's resources are being consumed has its roots in the industrial revolution – the same revolution which triggered the occupation of the Amazon rainforest by non-indigenous populations.

The intergenerational character of the issue of sustainability that came to light in the definition of the Brundtland Commission relies on fairness between generations by each one taking future generations into consideration. Nonetheless, the future notwithstanding, nearly all peoples and countries have continually avoided taking on the responsibilities of the present. It seems that the warnings of the 1980s and the 1990s appear not to have restrained countries' politics and people's habits in relation to the natural environment and humanity in general. Clearly, nearly everyone has decided that short-term benefits outweigh long-term benefits with their concomitant short-term costs.

The continued growth of mass production and the overconsumption of material goods, energy and natural resources have since then been the determinants of climate change, scarcity, and social crisis. Guattari (2000) and Chilean economist and environmentalist Manfred Max-Neef (2001) relate this problem to the individual sphere of human beings who, affected by pollution and capitalist pressures, suffer physically and mentally. Max-Neef (2001: 27) argues that,

The speed of production and the diversification of objects have become ends in themselves and as such are no longer able to satisfy any need whatsoever. People have grown more dependent on this system of production but, at the same time, more alienated from it.

This process of alienation, which Max-Neef connects to commodities and capital, can be observed in our daily lives, as we use objects without knowing how or where they were made. However, the effects of alienation can be extreme among local cultures that have for instance been forced to abandon their way of life, their traditional activities and their location due to external factors, as has been the case for many indigenous and non-indigenous populations from the rainforest. Davis (2009: 2) suggests that the diversity of cultures is as important to the wellbeing of our planet as the natural environment is. Davis (2009) uses the term 'ethnosphere' to describe the intellectual and spiritual web of life which is constituted of the wide variety of cultures, myths, beliefs, intuitions, ideas and inspiration brought into being by human imagination. However, both the ethnosphere and the biosphere have been severely damaged, as in the Amazon rainforest. The massive destruction of timber, replaced by cattle grass and monoculture, causes desertification and the dissipation of entire communities, their culture and knowledge. Therefore, the destruction of natural resources also means the loss of an immense potential of production of non-wood products offered by the rainforest, ranging from oils and natural essences, medicinal plants and natural rubber, to seeds, roots and exotic fruits such as the *assai*. Small producers in the rainforest care for the vast green areas which sustains them, and retain a deep and esoteric knowledge. It is estimated that a rubber tapper protects an area from 300 to 500 ha (Sky Rainforest, 2014), which corresponds to an average of 300 rubber trees set among hundreds of species of plants and animals (Pastore, 2011: 12-16; Melonio, 2014).

2.3.1 Formation of the rubber-tapping communities

Initially, Brazil was the only producer of rubber. The commodity became the national economic driver between 1879 and 1912 due to its extensive use worldwide allied to the monopoly. It was the reason for the widespread occupation of the forest region by incomers, and the development of important cities in Amazon such as Belém, Manaus, Rio Branco⁴, Santarém (Figure 2.16) and many small villages and communities in the depths of the Amazon rainforest. The rubber monopoly was broken by the British, who smuggled seeds out, domesticated the species and spread plantations throughout Malaysia, Sri Lanka and tropical Africa by the end of the 19th century, causing the collapse of the rubber economy in Brazil (Davis, 1996; Weinstein, 1983).



Figure 2.16: Brazilian map. The stars, left to right, mark the cities of Rio Branco (in Acre), Manaus (in Amazonas), and Santarém and Belém (in Pará).

⁴ At the beginning of the 20th century, the state of Acre, now in the extreme northwest of Brazil, was incorporated into the country as a result of an armed conflict with Bolivia followed by diplomatic agreement, due to the rubber production in the region.

Panel 2.5: Rio Branco, Acre, Brazil



Figures 2.17: Upper row: Rio Branco Palace, where the government of the state of Acre is based, with Christmastime projections on its walls. Lower row: Rio Branco's tourist market, 17 December 2011.

Between 1942 and 1945, rubber once again became a strong economic product in Brazil due to an alliance it formed with the United States, whose Asian suppliers were blockaded by the Japanese forces during the Second World War. A huge labour migration, called 'Soldiers of Rubber' was sent from poor areas of the country, mostly from the northeast, into the depths of the Amazon rainforest. After the war, the rubber tapper soldiers were abandoned in the 'green hell'⁵, as the rainforest became known, unable to return to their homelands. As a consequence, those who survived learned how to coexist with the natural environment of the rainforest, where they

⁵ The Amazon rainforest became known as the 'green hell', as many men who had been sent there to tap the rubber trees during wartime died, suffering from the unfamiliar environment. Those who survived were unable to return to their homes, and today, some 70 years later, some families living in the rainforest still seek relatives in other parts of Brazil.

settled down, forming communities (Loadman and James, 2010; Amaral and Samonek, 2006; Revkin, 1990; Weinstein, 1983; Davis, 1996; Loadman, 2005).

2.4 Significance of the rubber activity

The environmental importance of the rubber tapper is historically circumstantial. Due to difficulties in harvesting the *Hevea* in the Amazon rainforest, the rubber production in the Amazon remained wild instead of in plantations. This unique aspect of production justifies the ecological importance of the economic activity of the rubber tappers. At the same time it represents an economic limitation. Rubber trees are spread throughout the rainforest and linked by invisible trails that only the indigenous people know. This coexistence with the rainforest is a resource of vast knowledge embedded in the culture of the local people, and in their tacit and empiric knowledge about the use of the natural resources. The geographic location strongly defines the culture and livelihood linked to that location, with its natural resources and climate.

2.4.1 Productive conservation

Productive conservation characterizes the economic use of natural resources of the rainforest alongside its preservation (Hall, 1997: 2). Regarding this concept, the ecological sustainability of the rainforest can be understood as the ability of a certain population to occupy and explore natural resources of a certain area without threatening its ecological integrity over time (Lima and Pozzobon, 2005: 45). This harmonious way of living has only a limited impact on the rainforest (Lima and

Pozzobon, 2005: 61; Hall, 1997: 239) and characterizes the model of productive conservation of the rubber-tapping activity.

Rubber tappers became politically important to the Amazon rainforest after a series of popular movements to stop rainforest destruction for logging during the 1970s and 1980s. Small traditional producers gathered together against large-scale livestock rearing, crop growing, timber extraction and industrialization (Hall, 1997; Schmink, 2011). The political pressure exerted by the rubber tappers in defence of the rainforest culminated in the murder of the main leader of the movement, Chico Mendes (Figure 2.18 below):



Figure 2.18: Rubber tapper, environmentalist and political leader Chico Mendes.⁶

This led to the demarcation of protected areas in the 1990's called *Reservas Extrativistas Chico Mendes* (RESEX) (Figure 2.19 and Figure 2.20). These protected areas legalized the occupation of the rainforest by traditional populations whose sustenance was generated through 'productive conservation' (Hall, 1997).

⁶ Available at: <http://ecoredesocial.com.br/2015/07/quem-foi-chico-mendes> (Accessed: 12/07/15).



Figure 2.19 and Figure 2.20: Chico Mendes RESEX, a protected area for productive conservation, 2011. Several such reserves were created in the Amazon rainforest as a consequence of the political activism of the small-scale producers living in the rainforest.

Hall argues that the traditional populations from the Amazon only succeeded in their cause because of the outcome of their individual and collective interests, which encouraged collaboration between natural resource-users in common-pool situations (1997: XXV). The rubber tappers, already settled, organized themselves to defend the rainforest in a long political battle against deforestation caused by farmers and woodcutters between 1975 and the 1990s, when the Extractive Reserves (RESEX) were created (panel below, Figure 2.21, Memorial Chico Mendes, 2011; Gomes *et al.*, 2014).



Figure 2.21: Panel at the Memorial Chico Mendes displaying a historic moment of the political movement of the rubber tappers. Rio Branco, 17th December 2011.

These communities always had a subordinate position relative to that of explorers, politicians and farmers. According to Hall (1997: 239), the political movements stimulated by them engendered reasonable solutions, and national and international visibility, mainly in the environmental field:

Despite many inherited problems, local communities have a decisive role to play in the sustainable management of local resources. It has also been demonstrated that grassroots action may act as a catalyst for broader policy innovation

2.4.2 Challenges of the rubber productive conservation

The rubber tapper is familiar with large areas of rainforest. He taps the tree trunks to bleed the sap, called latex, into cups attached to the trees. Rubber tapping is a predominantly male activity, as it requires long walks in the depth of the rainforest (Panel 2.6) and traditionally it is the rubber tapper who does the processing of the latex into rubber. Patterns traced on the trunks over generations reveal scars from the past that the rubber tapper recognizes. After four to seven hours' walking and tapping the trees in the depth of the rainforest, he makes his way back, collecting the liquid from the cups in an impermeable bag. American science and environmental writer Andrew Revkin (1990: 71) describes the way rubber tappers instinctively communicate with the forest:

Tappers feel strongly the relation with the trees. Many agree that the trees come to know the touch of individuals. 'Every time a new tapper starts cutting a rubber tree, the tree has to get used to the guy, otherwise, the tree doesn't produce very well. The tree feels who is doing the cutting. Every tapper has his own style, his own way of softening the *seringa*⁷.'

⁷ *Seringa* refers to rubber trees. *Seringueira* or *seringa* became the popular name of the rubber trees due to the application of latex in the manufacture of bottles named 'seringa'.

In this context, the attainment of sustainability depends upon meeting a number of complementary and mutually interdependent goals, such as biophysical preservation, economic feasibility, organizational competence and socio-political solidarity (Hall, 1997: 95). Hall argues that in the case of the Amazon rainforest sustainability can be defined as 'the productive use of natural resources for economic growth and livelihood strengthening, while simultaneously conserving the biodiversity and socio diversity, which form an integral and indispensable part of this process' (Hall, 1997: 95).

Brazilian anthropologists Lima and Pozzobon (2005: 60-61) comment that traditional knowledge and practices of low environmental impact are not always rationalized as know-how, but they are often immersed in a semantic field that extends beyond economic practice. The deep relationship between the local people and the flora and fauna of vast areas integrates a cosmology composed of a vast ecological knowledge. A series of taboos, myths and sanctions regulate the interactions between those peoples and nature. However, although the rubber tappers became known as the 'guardians of the rainforest', the reality is that economic challenges have put their livelihood at risk. Due to the lack of market opportunities added to the difficulties of earning a living from the natural products, those populations tend to migrate to the urban centres, abandoning areas vulnerable to deforestation – and forgetting their deep knowledge of the natural resources.

Panel 2.6: Tapping wild rubber trees



Figure 2.22: A rubber tapper collecting latex in the surroundings of his house in the rainforest at RESEX Chico Mendes, 2011.

There are a series of challenges that put the sustainability of productive conservation at risk. On one hand, the production of rubber promotes livelihood in the rainforest, suggesting an ecological and cultural significance for the rubber tappers. On the other hand, this material cannot compete with natural rubber harvested in plantations, nationally or internationally. So the traditional techniques of processing the material do not generate a viable income for the local families, and the consequent low return prevents the continuation of the activity. The lack of market opportunities and competitiveness of the wild rubber generates serious socio-economic and environmental consequences. Many local people, desperate, have changed their activities to predatory practices in order to get immediate returns – clearing areas of rainforest for timber, plantations and cattle, or working as cheap labour for big farmers or timber loggers – or as a last resort migrating to urban centres. For them, poverty is imminent and inescapable. Amaral and Samonek (2006: 5-8) suggest that the doubtful politics relating to the economic development of the region has assumed the natural resources to be inexhaustible. But in fact the biome can be and is being destroyed – and that means the destruction of the indigenous practices, knowledge and cultures. The photos in Figure 2.23 show the replacement of the productive conservation by a growing rural lifestyle.



Figure 2.23: Cattle grass in areas where the rainforest has been 'cleaned'. Acre, 2011.

The continuation of the traditional communities in balance with the ecosystem is closely related to the productive activity of the rubber and its integration with other local products, such as wild fruit and fish – as discussed in a meeting with different stakeholders working in the region, the integration of the different economic activities is important for the generation of economic income throughout the year, as those depend on seasonality (Sky Rainforest Rescue meeting on 16th September 2015). In contrast to the situation described above, these families, who are enabled to make a living from native products, have demonstrated a degree of wellbeing that is linked to satisfaction with their work, identity and livelihood in the rainforest (WWF-Brazil, 2015; Lelis, 2013).

A number of studies defend the hypothesis that there is still potential for the productive conservation of wild rubber by local rubber tappers, which can be sustainable and can enable the reorganization of the work in the rainforest without damaging the natural environment or the way of life and culture of traditional populations (Pastore and Pierozan, 2007; Amaral and Samonek, 2006; Hall, 1997: 119). The rubber trees integrate into the ecosystem of the rainforest, spread out as they are throughout its length and breadth. This means there is plenty of potential for the rubber production that has not been explored (Amaral and Samonek, 2006: 22–23).

In the face of assumptions that populations from the rainforest live apart from a global market, the productive conservation of the rubber in fact demonstrates the opposite. The diagram in Figure 2.24 summarizes a relation of influences, of multiple causes and consequences, which interconnects local communities and the rainforest to the global

market. The production of rubber has helped create in the rainforest hundreds of communities whose economic activity aims to supply an industrial and global market. This relationship has changed over time, however, the rubber-tapping communities becoming more autonomous but also more dependent on demand for the commodity that has unfortunately decreased. Rubber is still an economic element that maintains populations that are living in and connected to the rainforest, but for whom viability is crucial. This interdependence is essential for the sustainability of the local communities in the rainforest. Thus, the creation of new ways of stimulating the local economy through the productive conservation of the rubber is of great importance to those peoples.

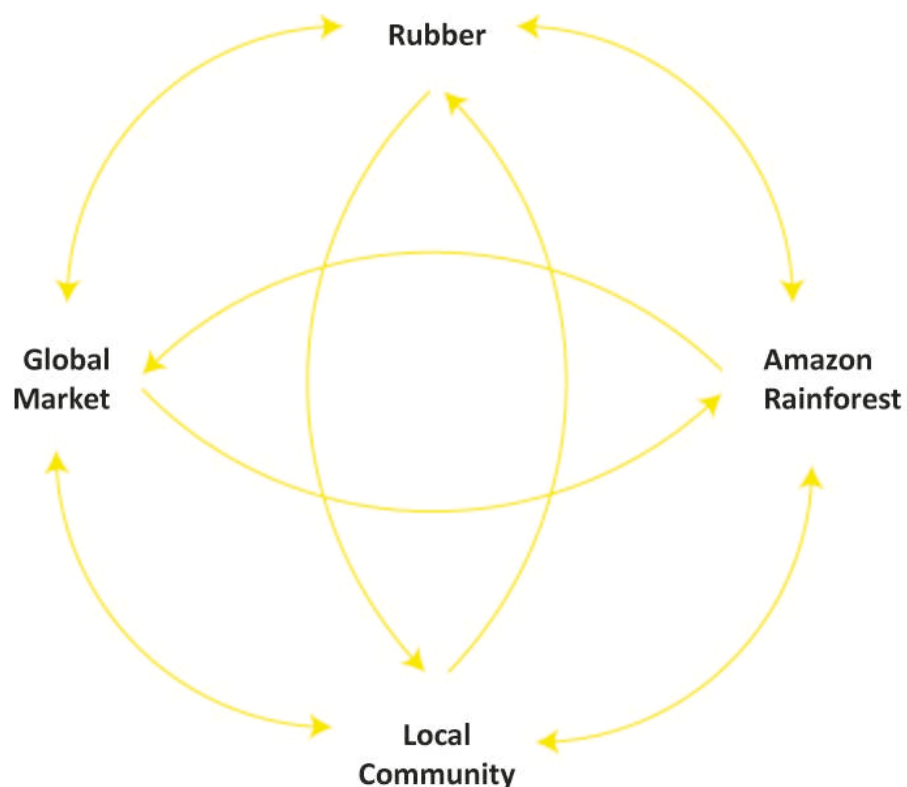


Figure 2.24: Multiple influences and interdependences inside and outside the rainforest.

2.5 Strategies for sustainability

The mitigation of the process of productive conservation, as described in the previous section, requires the provision of incentives for the creation and maintenance of mechanisms for the economic use of the natural resources in a non-destructive way (Hall, 1997: 122). Multiple efforts have been gathered together for the creation of new opportunities for the productive conservation in the rainforest. They result from coalitions involving producer communities, local governments, non-governmental institutions, universities and entrepreneurs, among other stakeholders. This has been the aim of the non-wood projects – that is, those that do not involve felling trees – that have developed technologies to encourage the scheme of productive conservation in the rainforest since the 1990s (Pastore and Pierozzan, 2007). Research has been carried out, as have numerous projects, in order to support these small-scale economies, and a number of technologies are currently available to be transferred and assimilated by rubber-tapping communities (Amaral and Samonek, 2006: 5-8). Unlike the large-scale production operations, these simple technologies are intended to support local communities in their small-scale economic activities. Contrary to assumptions of their being static, populations living in the forests are engaging in a series of changes as a way of dealing with socio-economic struggles. Allied to local creativity, the reconfiguration of the rubber activity in the rainforest has demonstrated a possible route to local sustainability. This process of social change configures a social innovation process.

2.6 Social innovation for productive conservation

Social innovation comprises the development of new methods, strategies, policies, products and services in order to promote new patterns of conviviality, socialization and production that can contribute to the enhancement of people's wellbeing in society (Manzini, 2015; 2013; Franz *et al.*, 2012; Mulgan, 2012; Dees and Anderson, 2006; Thompson, Alvy and Lees, 2000). Social innovation is summarized by Franz *et al.* (2012: 6-8) as 'new social practices with social ends and social means' combining production factors and social practices.

Social innovation projects have been offering alternatives by combining simple technologies and traditional methods of production in small-scale solutions. Local rubber-tapping communities have embraced new methods of producing rubber in order to improve their socio-economic situation and to preserve their livelihoods in the rainforest. Technologies for the production of higher quality rubber have been transferred to local communities, allowing them to access new markets that thrive on differentiated materials with an ethical and ecological background. The *TECBOR Project* and *Poloprobio* are two of the important research projects for the development and transference of technology for rubber production. Both research groups focus on combining indigenous techniques of production with technological inputs to transform and improve the material.

The support of local governments, institutions, and entrepreneurs has been fundamental to endorse innovation. A context of transformation has been experienced

by many communities whose producers are increasingly organizing themselves in cooperatives in order to support each other, manage collective production and develop projects allied to external partners. The current context of the rubber production proves that social innovation is strategically aimed towards the continuation of productive conservation of the rainforest. Collaborations and coalitions both inside and outside the rainforest are necessary, and have been generating new opportunities as new methods of producing rubber are discovered. In this context of new materials and an emergent handcraft activity, design appears to be able to make important contributions.

Since the industrial revolution, rubber has been a commercial commodity rather than a material used for in handmade artefacts. Although a few rubber products, such as shoes, were produced for local use, the fact that the material was raw and non-vulcanized prevented the development of a handicraft tradition. The next section gives an overview of the old and new methods of production, demonstrating that innovation in the rainforest is both technological and creative. Through the new materials, design and crafts are becoming powerful agents of social change.

2.6.1 Technology for the production of rubber and rubber artefacts

Industrial methods have been found necessary to process the traditional kinds of commodity rubber; these are the CVP (*Cernambi Virgem Prensado* or Pressed Raw Rubber), GEB (*Granulado Escuro Brasileiro* or Brazilian Dark Granulated) and *Pela*. First, the liquid latex is smoked or allowed to rot. These substances, full of impurities and of low quality, are then sold to an intermediary milling plant to be reprocessed, then sold

on to the industry. The smoking process, which forms the dark ball called *Pela*, is toxic to humans and commonly related to cases of blindness and lung cancer (Pacheco, 2010). Industrial milling plants are also highly polluting and wasteful. According to Amaral and Samonek (2006: 18), the production of industrial rubber in the Amazon rainforest today is insignificant and no longer provides any justification for the existence of processing plants.⁸ For example, there was only one rubber-producing industrial plant functioning in the state of Acre in 2006, in Sena Madureira. However, the existence of rubber-processing plants is still important, as there are still communities who live off this system.⁹



Figure 2.25: Rolls of smoked rubber known as *pela* (date unknown). Figure 2.26: Rubber tappers weigh the raw rubber known as *cernambi a granel*, which is coagulated naturally by rotting in cups. Figure 2.27: Blocks of pressed raw rubber (*Cernambi virgem prensado – CVP*).

Innovative methods of producing rubber have been directed both to industry and to the making of design and crafts products. Instead of focusing on the industry and external market alone, these methods also respect the rubber tappers and the rainforest. They are simple technologies, which result in new kinds of rubber, of an

⁸ The milling plants are small factories which function as intermediaries between rubber tappers and the industry. The plants process the raw rubber produced by the rubber tappers, then sell it on. The price they pay the tappers for the raw rubber can be very low – at the time of writing less than £1/kg (one pound sterling per kilo) – unless there are governmental subsidies that may add about 20 per cent onto the usual price of the material.

⁹ A new rubber-milling plant is being implemented in Sena Madureira at the time of writing (2014-2015) with the aim of consuming all the commodity rubber produced in the state of Acre. The objective is that producers should have a guaranteed buyer for their products. This is an initiative of the local government, together with rubber-tappers' cooperatives, NGOs and the private sector.

improved quality, which can be used for different applications and attract better prices. They are the outcomes of research that aims to provide options for rubber production that are healthier and less polluting, and respect the way of life of the traditional populations while at the same time generating a higher economic return.

The transference of technology to the local communities takes place through a combination of multiple efforts and investments by local governments as well as by national and international institutions. However, most importantly, innovation is generated through the perception and proactive will of the rubber-tapping populations to transform these technologies into opportunities for themselves.

Nowadays, different kinds of rubber have been produced in the states of Acre, Rondônia, Pará and Amazonas, and in neighbouring countries such as Colombia, Peru and Bolivia (WWF, 2014: 15). The adoption of methods for the production of rubber sheets has been replacing the earlier kinds of commodity rubbers; there are now about four different methods of manufacturing rubber sheets that eliminate the intermediary processing plants. The option of producing rubber sheets as a commodity has guaranteed medium-term work for entire communities, as the material is ordered in bulk. Industrial applications can vary, but at the moment shoe soles are the main applications. French companies Veja (Figure 2.28) and Piola (Figure 2.29) buy rubber sheets from local communities in Brazil and Peru respectively (WWF, 2014: 9). The Brazilian company Mercur applies this raw material in the fabrication of numerous products such as medical utensils, stationery, sports equipment and small everyday

appliances. These companies order many tons of rubber each year, maintaining a continuing relationship with the rubber-tapper communities.



Figure 2.28: Veja Shoes trainers produced with FDL rubber from Acre, Brazil. Figure 2.29: Piola shoes, produced from rubber sheets produced by communities of the Peruvian Amazon rainforest.

The rubber sheets used by Veja and Mercur in their products are among the materials developed by the Technological Chemistry Laboratory (LATEQ) at the University of Brasilia (UnB), coordinated by Brazilian chemists Pastore Jr. and Vanda de Souza. Since the 1990s, this group has focused their studies on non-wood products from the Amazon rainforest, with the intention of reinstating traditional activities that contribute to social and environmental sustainability (Pastore Jr., 2011: 12-14). Figures 2.31 and 2.32 show FSA being made in the LATEQ production unit at UNB in 2004.



Figure 2.30 and Figure 2.31: Production of FSA in the production unit of LATEQ at the University of Brasília, 2004.

In order to develop projects in this area, three building blocks were established: firstly, socio-economic research into the non-wood activities of productive conservation of the Amazon rainforest, which resulted in a series of short documentaries; secondly, the organization of an encyclopaedia cataloguing Amazonian plants; thirdly, technological research into the improvement of productive conservation activities, such as the production of natural essences and oils, and the processing of wild rubber. That third building block – the technological research – grew into the project and research group titled *Technology for the Rubber Production and Rubber Artefacts from the Amazon Rainforest* and known as TECBOR. To date, TECBOR's research outcomes comprise the following three rubber technologies developed for adoption by the traditional communities:

(i) **Liquid Smoke Rubber Sheet (FDL – *Folha de Defumação Líquida*)**



Figure 2.32: FDL rubber sheets produced by Jamaraquá community, Pará (INEA, 2013: 96). These rubber sheets are sold directly to the rubber industry.

FDL rubber sheeting is free of vulcanizing and pigments. This material makes industrial milling plants unnecessary. These have intermediated the production process, as they are free of impurities and ready to be reprocessed by the artefacts industry. FDL has been the most widely disseminated practice since the 1990s, having already become the main product of some communities in the states of Acre, Amazonas and Para. It is a type of rubber that goes directly to the industry and therefore generates strong demand; it is the kind of rubber bought by Veja and Mercur directly from local communities in the Amazon rainforest.

(ii) **Semi-Artefact Rubber Sheet (FSA – *Folha Semi-Artefato*)**



Figure 2.33: FSA rubber sheets produced by the community of Parque das Ciganas, Acre, 2012.

FSA comes as coloured rubber sheets which are vulcanized (Section 2.2.1: p.36) and are therefore suitable for the manufacture of handcrafts and design products. FSA is a rubber ready to be applied, as is leather or conventional fabric. The manipulation of FSA during its solidification enables the manufacture of artefacts. This is the material that I work with, and which is related to the social innovation process that I bring to the fore in Chapters 6 and 7. The process and the opportunities for social innovation of this new material are described in Section 2.6.1.

(iii) Amazonian Rubberized Textile (TEA – *Tecido Emborrachado da Amazônia*)

TEA is a method used to rubberize fabrics which dispenses with the smoking process; it is replaced by liquid vulcanization. The process combines the principles of FDL and FSA in the way that they produce vegetable leather – but this process differs from those used to produce vegetable leather by eliminating the smoking and the harsh chemicals. Moreover, while vegetable leather is predominantly brown, a TEA rubberized textile retains the colour and texture of the fabric. It is, at the time of writing, a result of the most recent research from TECBOR/LATEQ laboratory, which was taught to the community of Jamaraquá in the State of Para in 2014, and is still in the initial stages of integration into the rubber activity of this community.



Figure 2.34: Rubberised Textile (TEA) in a drying box. Photo: Isabella Henrique, 2016.

These three techniques have similar methods of production, which will be explained through the production of the FSA rubber sheet in the following section. These technologies of rubber production have been transferred to communities from the states of Acre, Amazonas and Pará through alliances between the local cooperatives and the public sector, the private sector and the University of Brasilia.

2.7 The production method of the coloured rubber FSA

Panel 2.7 shows the processing of the latex into FSA (Semi-Artefact Rubber Sheet). The rubber tapper brings the latex collected in the rainforest to the production unit built beside his house, where he works together with his family¹⁰ to process the liquid into rubber.

¹⁰ The family comprises a couple and their children. Older children (from about ten years old) may get involved in the rubber production. Although laws against child labour are strict in Brazil, learning to survive in the rainforest surrounding them and to make responsible use of its natural resources is part of the education given by the parents in this context and does not mean exploitation. The parents are advised not to allow the children to make the mixture during training sessions, nor to use the roller press, but they can, and generally do, help in other phases of production, as they follow their parents in their activities. Nowadays most children in the rainforest attend primary school, but secondary school is limited to only certain areas (WWF, 2014: 16). School lessons are generally in the morning and are an important part of the community life; adult education is also provided at other times of day.

Panel 2.7: FSA production process




Figure 2.35: The process of production of FSA, from wild trees to final rubber sheets.

As shown in Panel 2.7 above, the rubber tapper collects the latex in the rainforest and brings it to the production unit. The latex is then mixed in trays with coagulant, and in the case of the coloured rubber FSA, pigments and a vulcanizing mixture are also integrated into the rubber recipe.¹¹ It solidifies after some hours, acquiring a spongy texture. Then the artisan producer passes the rubber through a roller press to expel the water and turn the rubber into a thin sheet, which is then hung up to dry.

¹¹ In terms of chemicals, the FSA incorporates the vulcanizing mixture (MV), which is mainly sulphur, zinc oxide and accelerators. They are all classic rubber vulcanizing materials, present in items from tyres to gloves and condoms. The pigments are common minerals like iron oxides, widely used in latex house paints. The latex coagulant is pyroligneous acid, present in smoke. Unlike FDL, FSA does not incorporate any kind of fungicide, as the MV components themselves prevent the development of fungus.

FSA and the FDL are produced in the same way, but it is FSA that receives the vulcanizing mixture and the pigments.¹² Through this process, the coloured rubber sheets become elastic, tough and resilient. The pigments can vary from natural colours extracted from plants to common tints widely used as an additive in latex house paints. The idea is that the rubber comes from the rubber-tapper producer as a prefabricated material, ready to become a design product; this means the rubber tapper can profit from the added value. Artisan producers have also discovered the possibility of transforming the rubber into artefacts through handcrafts.



 Communities or Producer's Cooperatives

 Main cities

Figure 2.36: Maps indicating area of FSA production in the state of Acre.

The maps (Figure 2.36) identify the locations of producers of FSA, which are mostly in the state of Acre; but in the state of Pará, the Jamarauá community is also a producer of FSA.

¹² In their article, Amaral and Samonek (2006: 19) confused FDL and FSA. In fact, FDL application is solely industrial, while FSA has no industrial applications.

2.7.1 Opportunities and challenges presented by FSA

Numerous factors characterize both FDL and FSA as social innovation, as through them not it is not just methods of production that change, but also they have been a means of generating social, financial, environmental, cultural and symbolic values. According to Pastore Jr. (2011: 12–14), both FDL and FSA rubber have contributed to the restitution of productive activity for the rubber tappers. In this process of social innovation, the materiality of the rubber fosters individual and collective capabilities. Some of the opportunities of the productive process of the FSA are discussed below, with some additional information about the FDL, as both materials are similar to one another, and are produced by the same communities.

Both FDL and FSA are of superior quality to earlier forms of rubber, hence attract a higher price. FSA, the coloured rubber, earns the highest price of all kinds of Amazonian rubber;¹³ its value can be more than double that of other types. FSA is produced on a small scale as a niche product for small clients or projects. Thus, while FSA generates a short-term return that is higher than those of other kinds of rubber, it is in fact FDL that provides the long-term income for the producers, as its sheets are purchased in bulk – in tons – for industrial applications.¹⁴ So when the production of FSA and FDL are combined, they complement each other, as in the *Curralinho* community in Acre, which now has these two materials as its main economic source (Chapter 8).

¹³ The value of the natural rubber established by the Brazilian government (CONAB) varies between R\$ 2 and R\$ 6.3 (Brazilian *reais*) <http://www.conab.gov.br/conabweb/download/moc/titulos/T59s2012-2013.pdf>. Access date: 12 August 2015.

¹⁴ At the time of writing, the price of the FSA was about R\$18/kg, while FDL is about R\$11/kg (*reais* per kilo). (A kilo of FSA is equivalent to about four sheets), but the price in pounds sterling is unreliable as the Brazilian currency has been very unstable for some time.

FSA enables the manufacture of rubber handcrafts *in situ*, and has numerous applications in fashion and jewellery design. The financial return on FSA can thus be greatly increased through the manufacture of design products of handcrafts and it is therefore of more value;¹⁵ for example, a pair of rubber shoes costs from 300 per cent to 500 per cent more than a kilo of the rubber in sheet form.¹⁶

An important change in the production method is the elimination of the smoking phase for clotting the liquid into rubber, as described in the previous section. Apart from it being unhealthy, and causing lung cancer and blindness, eliminating the process results in a material of superior quality, which dispenses with the previous intermediation by industrial milling plants. This has another positive environmental impact, as the processing of the rubber by those plants requires tons of water, oil and energy, thus being extremely polluting (Peterson, 2006).¹⁷

The method proposed by TECBOR/LATEQ, in contrast, uses no electric energy and only a small amount of water, and generates practically no waste. So environmentally, the exclusion of rubber-processing plants from the production line not only represents a better economic return but also considerably diminishes the environmental impact of production. Overall, the result is clean production and a better final material which can be sold for a superior price. This method of production provides the rubber tappers

¹⁵ Prices of FSA were about £4.7/kg in 2014.

¹⁶ The price of a pair of shoes sold by Araújo ranges from R\$60 to R\$120. The cost goes even lower as they work with minimum waste, making use of the offcuts to make souvenirs and jewellery.

¹⁷ The processing plants however, are still important in the Amazon region as they purchase large amounts of rubber. The low value paid by the industrial plants to the rubber tappers are complemented with subsidies from the government (Rossi to Amadeu, 2015).

with the opportunity to deal directly with clients; this should enable the producers to be paid a higher price for the material than they received when dealing through middlemen.

Removing intermediaries from the production chain also puts the rubber tappers into a position to negotiate the sale of their products directly with the industry, becoming collective entrepreneurs through their cooperatives. The possibility of having a direct relationship brings perspectives and new challenges to these communities, which then need to organize themselves to take care of the collective production, payments and cash flows.

The processing of FSA, FDL and TEA also improves the working conditions of the rubber tapper, when after collecting the latex he comes back home to process the rubber in the production unit alongside his house. These new methods are not only more convenient than the old process of smoking and decomposing, but also demand less time and can be combined with other activities.

Because this process takes place in the production unit just beside the family house, the family can participate. As pointed out previously, the collection and production of rubber has been a male activity, but this is changing. The division of labour in the communities of the rainforest has in general comprised men working in the surrounding rainforest while the women take care of the plantation, house, children and animals. Many home-based activities are shared amongst the family members.

So these new rubber production technologies have started to attract women and young adults, who can easily participate in the process. The participation of the women and older children in the process is facilitated not only by the more worker-friendly methods of production but also by the presence of the production unit beside the family's house, enabling them to carry out their other daily activities as well.

The participation of the younger generation in the production of rubber is a major issue for rubber tappers, as due to work conditions and low economic return there is a decrease of young people's interest in their parents' activities. This causes the dispersion of communities to urban centres or to other economic activities such as mining and cattle farming. But with its provision of higher income and a range of new opportunities, the new production process appears to have attracted young people. This was something that I experienced during one of my visits to the artisan communities (Case Study 2), where there was a great deal of participation of people aged from 18 to 27 years. It was reported to me that the FSA rubber was significant in this process because of the possibility of making handcrafts. This makes this coloured rubber especially innovative, and is stimulating the re-engagement of men and women in rubber production.

2.8 Summary

The vital interdependence between local and global issues of sustainability has evolved in this chapter. It has brought a historical understanding of the context of the rubber-tapper communities in the Amazon rainforest. Through the materiality of the rubber

harvested widely in the rainforest, it has offered an overview of the context of the rubber-tapping communities in the Amazon rainforest and has demonstrated the reasons why the continuity of this economic activity is relevant. Through the rubber-tapping communities, this chapter brings to light a fundamental interdependence between local and global instances. This interdependence means that the dissipation of local communities from the rainforest portends the destruction of large areas of the rainforest, therefore aggravating the global ecological crisis with consequences relating to global warming, natural resources and the extinction of species of the flora and fauna.

Through the model of productive conservation, the rubber-tapping communities are linked both to the rainforest and to a broader market outside the rainforest.

This paradigmatic circumstance validates reflection upon social and environmental sustainability, which encompasses socio-economic, historical, political, cultural and environmental issues. In this context, where socio-economic tensions endanger the livelihood of these populations, social innovation projects have indicated new paths that can be taken towards the preservation of cultural knowledge and practices.

The following chapter presents how new materials emerging from the new production methods are triggering local creativity and engendering the involvement of designers in this context. This process demonstrates that social innovation is a continuous learning process from which capabilities emerge and expand, thus promoting wellbeing and social change.

3 Enhancing capabilities through the materiality of the artefacts

Sen (1999) offers the philosophical and practical theory of capabilities as an approach to wellbeing, and his approach has become an essential component of design discourses for sustainability. Evidence has demonstrated an involvement of designers with local small-scale producers as a way of tackling issues affecting their lives, in both their material and their immaterial aspects. Social innovation and social entrepreneurship have been modes through which interactions between designers and artisan producers occur. New methods of producing rubber in the Amazon rainforest, such as the coloured rubber FSA, have promoted new capabilities related to a creative exploration of the material. This scenario presents the opportunity to reflect upon the materiality of the artefacts as a means for new capabilities to emerge from design and craft.

3.1 Introduction

The socio-economic theory of capabilities proposed by Nobel prize-winning economist Amartya Sen (1999) offers a philosophical and practical insight into social change and wellbeing. This approach interrelates economic processes, wellbeing and social change, and has become an integral feature of the field of design for sustainability (Note 3.1). It has also grounded social innovation, social entrepreneurship and business initiatives that aim to contribute to society by integrating ethical concerns into production and products (Manzini, 2015; Mulgan, 2012; Murray *et al.*, 2010; Vezzoli and Manzini, 2008).

Note 3.1

Design for sustainability

The term 'design for sustainability' is applied throughout this thesis to embrace social and ecological concerns within design practices. Intrinsic to this approach to small-scale producer communities is the intention of creating social change and improvements in wellbeing, thus underlining the importance of the ethos of capabilities to ground both theoretical enquiries and the actual practice that follows.

A respectful and sensitive approach of outsiders to local communities has become a key practice of design for sustainability, which recognizes the importance of social and environmental concerns in the production of materials and goods. This chapter outlines a design practice that occurs in interaction with local artisan producers and through the materiality of artefacts, by examining capabilities developing from new methods of rubber production in the Amazon rainforest. New possibilities for the use of the material have encouraged local producers to develop new handcrafts, and designers participate within this process.

3.2 Capabilities towards wellbeing

The capability approach is primarily linked to understanding effective opportunity, through which people have agency towards social change and their own wellbeing, as well as that of others (Sen, 1999). This depends on a set of factors that are not just material but also immaterial, such as skills, knowledge, means, context and freedom of choice. The concept of freedom, which is discussed at length by Sen, basically concerns people's rights and abilities to choose what to do, and to enjoy living according to what they want and value (1999: 5). This means to have reasons and resources to proactively engage with opportunities, and be able to realise the aims and responsibilities that they imply. In contrast to a passive attitude, people should become active participants, taking on the responsibility of developing and changing their own lives and their communities (1999: 282-283). 'The perspective of capability focuses (...) on the ability – the substantive freedom – of people to enhance the real

choice they have' (Sen, 1999: 296). Capabilities are instrumental to people's agency towards wellbeing and social change (Sen 1999: 296).

The concept offers a philosophical and a practical approach that can be useful in the field of design. Sen (1999: 296) summarizes capabilities through the three points below. These can be useful both to ground practical approaches, and also to reflect upon implications and outcomes of practices for social change:

In looking for a fuller understanding of the role of human capabilities, we have to take note of:
1) Their *direct* relevance to the well-being and freedom of people;
2) Their *indirect* role through influencing social change; and
3) Their *indirect* role through influencing economic production.
(Sen, 1999: 296)

So for Sen, capabilities combine both material and immaterial assets, including human subjectivity. Feelings of contentment, self-reliance and affection are, for example, immaterial but fundamental aspects of wellbeing. Capabilities can serve as means to lead to greater wellbeing and social change. Lastly, Sen recognizes the importance of economic production in relation to people's wellbeing, but importantly he states that social change and improved wellbeing go far beyond that (1999: 296). For instance, many factors can restrict wellbeing, including not only people's capacity to generate income¹⁸ but also health, political participation, mobility, equality and social inclusion, among others (Sen, 1999).

¹⁸ The Gross National Product (GNP) is used to measure the wealth of a country by calculating the total value of goods and services produced in a year, plus the income earned by its citizens. The standard of living of a country's citizens may be seen as proportional to its GNP, but not by Sen (1999: 3), as for him, quality of life also includes immaterial assets.

Although the capability approach is not immediately applicable to design, its comprehension offers new ways of reflecting on and interpreting a design practice within producer communities. In this way, the ethos of capabilities substantiates design practices aimed at social change in communities where economic activity and wellbeing are interwoven within place and culture.

3.2.1 Wellbeing

Max-Neef's (1991) theory of needs has points of similarity with the capability approach to wellbeing and social change that can bring further understanding to this concept.

Max-Neef relates human needs to 'forms of being, having, doing and interacting', that are physical, physiological and psychological aspects of human existence and wellbeing (1991: 24-25); for instance, shelter is a physical need, water and food are physiological, and affection is a psychological need. The Wheel of Fundamental Human Needs (Nicolas and McIntosh, 2007), shown below (Figure 3.1), represents spheres of human needs through a series of determinant factors suggested by Max-Neef (1991):

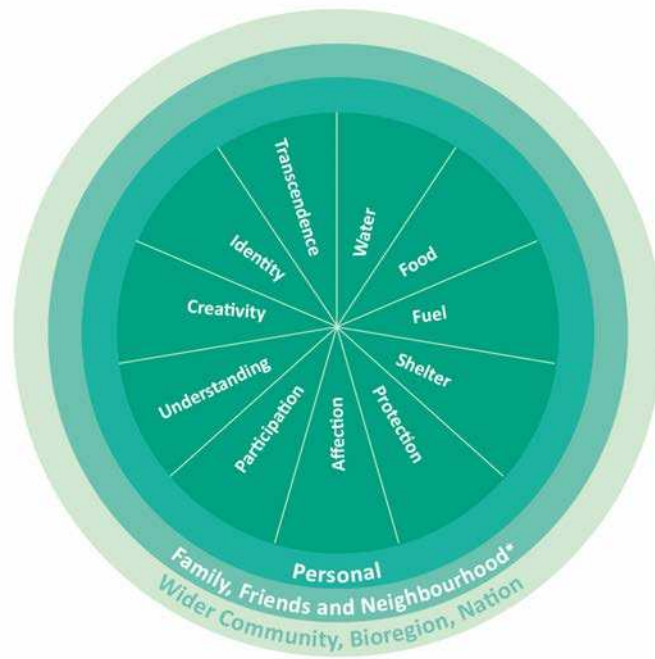


Figure 3.1: The Wheel of Fundamental Needs, Nicolas and McIntosh (2007). [Adapted by the author].

The Wheel of Fundamental Needs above illustrates the fact that wellbeing concerns physical, physiological and psychological aspects of human life. However, the needs of people in society differ, and indeed vary widely according to the context; furthermore they change through time, being neither fixed nor permanent (Max-Neef, 1991). In this way, Max-Neef saw the importance of identifying needs in order to motivate efforts for social change and wellbeing.

The wheel above also displays the importance of relationships and of personal contentment for wellbeing. In this sense, David Gauntlett (2011, 126) relates wellbeing to both people's attachments (family, friends, community) and their practices (that is, what they can do and like to do): 'happiness (...) stems from having meaningful connections with others, and meaningful things to do' (Gauntlett, 2011, 126).

Sense of community is an important aspect of the sense of individual and collective identity, which is shared through location, culture and productive practices, among others (McMillan, 1996: 315; Blackshaw, 2009; Smith 2001). According to sociologist McMillan, a sense of community is felt as 'emotional safety', where one has 'membership', a sense of belonging, acceptance, empathy, understanding, trust and caring (McMillan, 1996: 315–316; Putnam 2000: 274 in Smith, 2001).

These concerns relate to the approach of designers to producer communities – in some cases, in contexts where basic needs, such as water and sanitation, compromise wellbeing. Thus it is important to identify where needs exist and to develop projects that promote perspectives towards the evolution of long-term outcomes. At the same time, a strong sense of community is often present among locals, and this can be seen as enabling them to unite their efforts to deal with challenges. These ideas will be exemplified throughout this thesis.

3.3 Emerging capabilities through materiality

Chapter 2 introduced the process of social innovation developing in rubber-tapping communities in the Amazon rainforest through their learning and adoption of new methods and materials. This process will only evolve when there is proactive engagement of the producer community, making explicit social innovation through the emergence of new capabilities that can be observed through individual and social transformations.

When local producers began to transform the rubber through creative engagement, this top-down initiative, proposed by research institutions in coalition with the public and the private sectors – such as LATEQ/UNB and Poloprobio – became characterized as a mixed bottom-up and top-down initiative. The participants' sensory exploration of the materials allied to their new affordances (Note 3.2) enabled some of them to develop a new form of handcraft activity. As consequence a new economic activity began to develop, disseminating from individuals to entire communities, reinforcing a sense of identity and impacting on other aspects of wellbeing. The materiality of the new rubbers – especially the ready-to-use coloured rubber sheet (FSA) and, more recently, the rubberized textile (TEA) – have brought designers and local artisan producers together to collaborate on the artefacts. This is a key discussion in this thesis.

Note 3.2

Affordance

Gibson defines the 'affordances' of surfaces and objects as the actions that they enable (Gibson, 1986: 127). For example, when wet, FSA rubber enables forms and parts to be stuck together, structured and moulded.

3.3.1 Creative integration of the coloured rubber

I include 'creative integration' as a component of the reflective methodology developed in Chapter 5; I consider that not just technological but also creative integration are pivotal in order for social innovation to prosper and succeed. While technological integration relates to the integration of new methods in the productive processes or daily routines, creative integration goes beyond this by adopting,

adapting and transforming a social innovation through the creative transformation of material and methods. This concept can be linked to the idea of creative communities proposed by Vezzoli and Manzini (2008: 34) to define groups of people mobilized to solve a problem or develop new opportunities. I suggest that creative integration occurs when technological innovation is adapted according to local culture and individuals' views and becomes integrated into people's routines. Thus creative integration becomes part of the processes of social innovation.

It evolves from the creative exploration of the materials – or methods, services, products – further developing innovation by adapting and transforming it in unexpected ways. Rather than the mere acceptance of a new technology or technique, creative integration of that new technology is an expression of ownership and the ability to recreate with available resources. It can thus be inferred that creative integration is a type of capability which can be powerful in promoting social change. Through crafts and design, this creative phenomenon exceeds the generation of economic value, becoming in addition a means for people to realise cultural, aesthetical and symbolic capital.

I have observed that among the rubber tappers, who throughout history have been anonymous labourers in the rainforest, the process of creative integration has, by transforming the rubber, also had a positive impact on the reaffirmation of their local identity, personal satisfaction and personal recognition by counterparts. The importance of local recognition became very clear to me when I was working with Araújo (Chapter 6), who is fiercely proud of his reputation. In his community there is a

clear sense of admiration and pride regarding his work as it enhances the standing of their community. So, artisans can become recognized in their own communities and then across communities in the rainforest, eventually being able to enter national markets. This recognition is an example of the symbolic capital that can be perceived in the artisan producers of the rainforest.

Craft activities with wild rubber – previously uninspiring due to the limitations of the raw rubber – have already produced examples of how social innovation can flourish. New methods and materials are innovative not only in terms of their method of production, but by resulting in a material ready to be used in the manufacture of crafts or design products. Therefore, they promote two more important outcomes:

- (i) The creative integration by the rubber-tapping communities, who transform them into handcrafts; and
- (ii) The direct engagement of communities with designers.

This process can be exemplified by the transformation of FSA into handcrafts by members of the rubber-tapping communities. Some of the best new artefacts have been made by the rubber tapper and artisan Araújo, who is the main actor of Case Study 1, Chapter 6; he used FSA to develop rubber shoes, and became a recognized artisan among rubber-tapping communities throughout the rainforest. Araújo also became a multiplier (Note 3.3) of this technology and of the handcrafts, teaching others in his own community and others. His work makes evident the role of

handmade artefacts for thriving social innovation, through which he became catalyst of individual and collective changes.

Note 3.3

Multipliers

The idea of multipliers provides an interesting opportunity to those involved in social innovation projects; multipliers can be community members or stakeholders in a project who alone or together can help disseminate new methods of production.

The community of Jamaraquá is another example where men and especially women have produced handcrafts using FSA, and recently TEA, mixing these materials with other local materials such as fibres and seeds. The people have organized themselves into a cooperative through which they organize courses, some with designers, for the development of rubber artefacts, such as jewellery, bags, souvenirs and lamps.

Panel 3.1: Emergent handcrafts with FSA

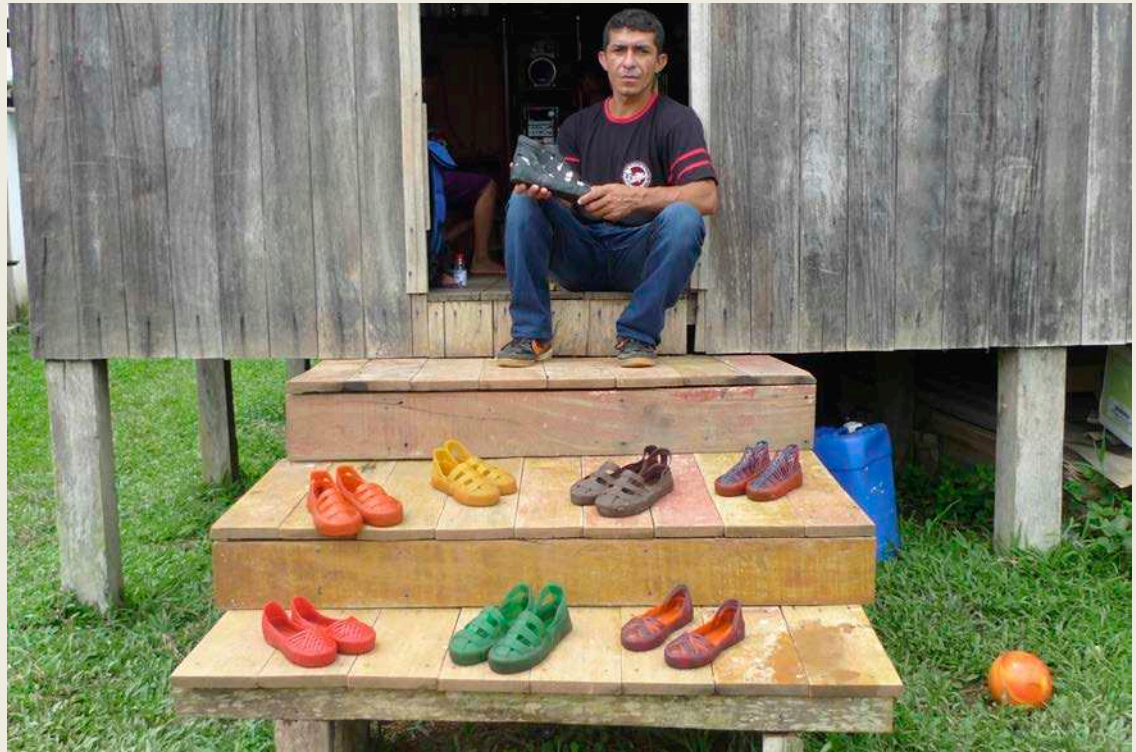


Figure 3.2: Rubber tapper and artisan Jose de Araújo showing his 100% rubber shoes made in the rainforest, 2011.



Figure 3.3: Handcrafts workshop with artisans in the Jamaraguá community, 2016: Bags combining FSA rubber and TEA; jewellery combining rubber and seeds (previously produced by the artisans) - the necklaces were used as bags' handles.

3.3.2 Other kinds of rubber for the development of artefacts

Social innovation initiatives are taking place among local communities with the objective of promoting social opportunities by enabling the productive conservation of the rainforest.¹⁹ Within this context, FSA and TEA are not the only kinds of rubber currently used for the making of rubber artefacts; others include:

Vegetal leather (Figure 3.4), a rubberized textile made by applying layers of liquid rubber latex over cotton.



Figure 3.4: Vegetal leather bag (TreeTap, 2005).²⁰

This process is based on the old method of curing rubber through smoking, which is unhealthy and environmentally unfriendly. Furthermore, Amaral and Samonek (2006: 15) argue that the production of vegetal leather has, with only minor changes,

¹⁹ The following 36-minute documentary (in Portuguese) gives a good indication of life and productive conservation in the rainforest through different products, including rubber, natural oils, seeds and fruit. It presents social innovation projects in the Reserva Extrativista do Médio Juruá: Coordenação de Educação Ambiental do Instituto Chico Mendes de Conservação da Biodiversidade - ICMBio (2013). Available at: <https://www.youtube.com/watch?v=P2Wnq-NIDYI>. Accessed: 29 Feb 2016.

²⁰ Treetap: <http://www.treehugger.com/green-architecture/treetap.html> Accessed: 13 March 2013.

prolonged the bad old labour system, incorporating a middleman who organizes production, supplies the textile and sells the product, while the community loses control and funds. Production of vegetal leather ceased in Acre due to the difficulty of maintaining the quality of the products caused by the irregularity of the smoking process (Amaral and Samonek, 2006: 15). However there are places where vegetal leather has continued to provide an income source, as in communities in the state of Rondônia (SIMPI, 2007) and Amazon (in *Boca do Acre*). Communities in these areas worked hard to improve the process and have acquired quality certification; as a result, they have sold their vegetal leather to the fashion industry, and they also use it locally to make bags and rucksacks.

The technology of production proposed by the Poloprobio project: Poloprobio (*Pólo de Proteção da Biodiversidade e Uso Sustentável dos Recursos Naturais*), is a project developed by Brazilian chemists Samonek and Damasceno from the University of Rio Branco, Acre (Poloprobio, 2011). This project developed a method for local communities to process the raw rubber that dispenses with the smoking process and kiln. Poloprobio developed rubber sheets composed of a mixture of latex with certain chemicals combined with natural fibres and natural pigments found in the region (Amaral and Samonek, 2006: 17). The community of Sena Madureira in Acre became well known for a variety of decorative and utilitarian artefacts made of this material, as can be seen in Figure 3.5.



Figure 3.5: Artefacts made of natural rubber and vegetal fibres by rubber tappers and artisans from Sena Madureira, Acre, 2011.

The *encauchados de vegetais (cauchos)* system draws on ancient indigenous techniques by applying thick layers of latex over textiles and allowing them to dry naturally. The process was rediscovered by Poloprobrio, and modified by adding chemical additives and heating. The method eliminates the unhealthy smoking process by pre-vulcanizing the latex; the textiles can incorporate coloured motifs, which are preserved by the transparent layer of pre-vulcanized latex. The *Kaxinawá* indigenous group has made use of this technique for handcrafts (Amaral and Samonek, 2006: 21; 31).



Figure 3.6: Bags made of *encauchados de vegetais* by the indigenous group *Kaxinawá* (Biodiversidade Natural, 2011)

Poloprobio has been training communities in Acre through funding, partnerships with numerous institutions, NGOs, local government and universities. It has also invested in multipliers, who can teach other communities and spread the technology throughout the rainforest.

Finally, artisan producers, such as Raimundo Nonato (Figure 3.7 below); he developed handcrafts using the old technique of smoked rubber.



Figure 3.7: Rubber tapper and artisan Raimundo Nonato. Figure 3.8: Handcrafted animals inspired by the fauna of the Amazon rainforest. Rio Branco, Acre, 2011.

3.4 The challenges of the social innovation of FSA

The adoption of new methods of production has provided socio-economic opportunities to rubber-tapping communities in vulnerable situations in the rainforest. The emergence of such creativity in the rainforest cultures appears to be a fruitful way of dealing with socio-economic pressures. FSA, for instance, triggers new economic possibilities for Amazonian rubber, and promotes innovation in both the production method and final product, which enables and indeed encourages craftmaking.

According to anthropologist Marianne Schmink, (2011: 154) projects that emphasize the marketing of forest products have reinforced the historical identity of the rubber tappers and created national and international opportunities. However, the artisan producers also face challenges in order to establish themselves with the new production methods; for example, due to the challenges of dealing with logistics, quality control and markets, some producers give up or are unable to continue. Amaral and Samonek (2006: 20-21) discuss the difficulties of re-establishing activity relating to rubber in the region, despite the higher economic returns. Many communities learn the new processes of production, but few manage to create continuity and turn it into a profitable activity; the same occurs for the craft activities. Sustainability of production seems to be a major challenge; Amaral and Samonek (2006: 20-21) see this as a problem arising from public politics in the Amazon. The concern is that to make local production feasible it is necessary to do more than just introduce new methods and the concomitant physical structure.

Hence capabilities depend on a series of factors. It seems that short-term approaches focused solely on the teaching of new methods are not enough. A more holistic approach by the parties involved, such as the designer, seems to be necessary. This also means, for example, facilitating logistics, which can be very tricky and expensive in areas difficult to access. Material and immaterial conditions are both necessary for the enablement of the productive activity and the whole set of values that it involves.

This embraces both individual and collective levels of know-how, decision-making and mutual support. Thus the development of social innovation depends on the proactive participation of the rubber tappers and their communities as well as coalitions with partners from inside and outside the rainforest. Pastore (2011 to Amadeu) affirms that the sustainability of the rubber-tapping communities in the Amazon rainforest does not occur in isolation, but can only be achieved on a small-scale though continuous and integrated actions; he means that social and environmental sustainability depends on the efforts of multiple stakeholders and the multiplication of capabilities across the hundreds of rubber-tapping communities in the rainforest.

As described in this chapter, this scenario shows that social innovation is not a simple practice achievable in the short term; it requires continuity and multiple efforts through mixed coalitions in which local cooperatives come together with the private and public sectors, and with a range of stakeholders such as designers, researchers, retailers and educators, among other professionals from inside and outside the rainforest who are able to support social change and sustainability. Above all, individual and collective ambition also matters in the realization of the existing opportunities. Nonetheless, more than the good intentions, it is more support after the implementation of social innovation that is often both necessary and desired.

Although FSA attracts great interest, its applications in design products are still limited. This may in part be related to specific characteristics of the material, such as its

elasticity, hardness, and smell.²¹ Other factors that have prevented designers from working with this material are linked to the challenges of production, for example, distance and communication have been major problems, as the communities are located in remote areas of the rainforest without telephone signal or internet access. Time frames can also be an issue. In the rainforest, the productive activities are often related to the seasons, and rubber cannot be produced during the raining period, generally from mid November to March. In addition, there is the pace of the community, the transport and logistics of the moving bulks of rubber material to the city. Quality control is another big problem: firstly, FSA is not just a new material requiring new techniques, but it also needs to be handled very carefully in the manufacture of products. Secondly, it is a handmade material and some characteristics of the material can vary a lot depending on the way it is made, for example, in its thickness, colours, texture and elasticity. This is an understanding that the producers and artisans need to acquire to be able to maintain and improve the quality of the material and the artefacts made from it. So designers and clients also need to understand these challenges and work together with the communities to find a balanced system of production that respects the uncertainties of the rainforest and the local culture, but that also reaches a quality standard adequate for the material and the products to be valuable for locals, designers and consumers.

All these obstacles are part of a learning that involves not just artisan producers and designers but extends to a range of relevant stakeholders. Working together in the

²¹ The strong rubbery smell of the material and the need to clean it from time to time has discouraged designers from working with it. Research by LATEQ to improve FSA continues to the time of writing (2015), and attenuation of the smell is being achieved by including natural oil essences in the composition of FSA.

field changes the comprehension of the challenges and reinforces the idea that long-term partnerships are necessary in order to support the production and logistics of rubber and rubber products. The understanding of the production processes and chain is another reason why designer participation is important; when the challenges are understood, solutions can be developed and partnerships built that generate the capabilities needed to make the local products and to create social innovation.

Other parallel activities within the system of productive conservation can also influence the choice of the local producers to work with rubber. For example, the *assai* berry has been one of the main resources from Amazon that can be produced in tandem with rubber. This last case means however that while there are other opportunities, capabilities are in place warranting the continuation of the knowledge and cultural practices of the local communities.

3.5 Design aiding social innovation of the Amazonian rubber

Social entrepreneurship signals imperative to drive social change (...) with transformational benefit to society' Martin and Osberg, 2007: 30.

In the context of the Amazon, the involvement of designers and design companies with the rubber-tapping communities has been shown to be pivotal to the process of social innovation and to support capabilities. Designers have taken part in projects of this nature as consultants, project managers, researchers, collaborators, volunteers and entrepreneurs. Both the consumption of the material for the development of design products and the designers' direct participation within collaboration in community

contexts has proved contributed to opening new markets and supporting the development of new capabilities. In this context, an emergent phenomenon allies design and crafts as agents for social change and sustainability.

Designers have performed in this scenario in different ways, such as:

- By using the local rubber in the design industry, stimulating production and promoting the story and importance of the producers;
- By supporting social innovation through working with community for the assimilation of new technologies and methods of production;
- By collaborating on the creative and technical development of the artefacts, such as through workshops;
- By linking consuming markets;
- By purchasing the material and applying it in fashion, jewellery and product design;
- By researching the use and qualities of the material;
- By supporting visual communication of community's products.

Social innovation was presented in the previous chapter as a complex and gradual process that entails the enhancement of capabilities and social change with the aim of promoting people's wellbeing and, in the case of the rainforest, environmental wellbeing as well. The participation of designers within these producer communities occurs through different modes of project or initiatives aimed to support this social innovation process. Examples range from social entrepreneurship related to the social

and environmental responsibility of companies to micro and small entrepreneurs keen to conduct their business and design work through ethical values.

3.5.1 Social entrepreneurship

Companies and solo entrepreneurs have dedicated efforts and investment into the social and environmental cause of the productive conservation of the rubber in Amazon rainforest. Social entrepreneurship is grounded in business models that feature altruistic approaches intended to identify opportunity to satisfy unmet social needs and create social value (Martin and Osberg, 2007: 34). Although social entrepreneurship can be either for-profit or not-for-profit, it is the drive and intended outcomes that are the creation of forms of capital that benefit people's wellbeing, including financial capital. Social entrepreneurs aim to create of social capital, aesthetic capital or environmental capital, or a combination of those (John Thompson, Geoff Alvy and Ann Less, 2000; Dees and Anderson, 2006; Dees, 1998; Thompson *et al.*, 2000: 330; Dees, 1998).

Some scholars consider social entrepreneurship to be a range of initiatives and businesses led by social and environmental responsibility (Littrell and Dickson, 1999; Thompson, 2000). Other scholars, such as Dees (1998), and Martin and Osberg (2007), clarify that entrepreneurship is not ordinary business but consists of innovative initiatives able to revolutionize socio-economic, technological and cultural patterns. In this way, social entrepreneurship is included under the umbrella of social innovation.

Both modes, however, have supported social innovation in the context of the Amazon rainforest, being crucial to the promotion of capabilities and social change.

In this context, design has been a means through which a range of social entrepreneurship has performed projects and initiatives. This is one of the ways in which designers have been active agents of social innovation, participating in the idealization of projects, implementing them, catalysing creativity, leading and/or nurturing local initiatives and projects with producer communities (Manzini, 2015; 2013:58). Social entrepreneurship can be led by big companies or by micro-entrepreneurs. Examples of companies supporting productive conservation of the rubber are the shoe company Veja and the rubber company Mercur. These two have fostered the production of FDL by many Amazonian communities throughout the year, warranting income for a number of families. These social entrepreneurships, more than purchasing the products, work together with stakeholders such as community cooperatives and local government in order to enable the viability of production.

3.5.2 Small and micro-entrepreneurs

Many designers are micro-entrepreneurs who embed social and environmental values within the core of their actions and businesses. According to Thompson *et al.* (2000: 336), small and medium business can have limited, but also valuable, social impacts. A small-business approach to small-scale producers seems to rely on social capital and to inherit the sense of social responsibility and the ethical behaviour of the owner of the business and key stakeholders (Fuller and Tian, 2006:287–290). Among the new rubber

materials in the rainforest, it is FSA that has mostly attracted the attention of designers, for example Mumo, led by British designer Kirstin Samuel, travelled to the rainforest to follow the production of the material in 2014 and to develop a range of products. Handprint Crafts is an online brand created by Portuguese designer Andréia Rocha to promote sustainable designers and materials; Rocha has represented the artisan Araújo (Figure 3.2) in Europe, selling online, in markets and shops. Her work with the artisan has lasted more than three years. Brazilian designer Bruno Trindade has been working with the community of Jamaraquá both by purchasing FSA to develop his authorial work (Figure 3.9) and also by collaborating with this community in the creation and refinement of local products. Similarly, I have been working with communities in the states of Acre and Pará since 2004, by purchasing rubber sheets to help develop my authorial work (Panel 3.2) projects and workshops, besides the collaboration described in Chapters 6 and 7. Since 2013, product designer Yair Neuman (Panel 3.3) has investigated FSA, having recently put some products in the market.



Figure 3.9: Lamps made of FSA rubber from Jamaraquá community by Brazilian designer Bruno Trindade, 2012.

Panel 3.2: Organic Jewellery collection



Figure 3.10 and Figure 3.11: Organic Jewellery Collection Flavia Amadeu, 2014. Photos: Katherine Needles, 2014.

Panel 3.3: Yair Neuman

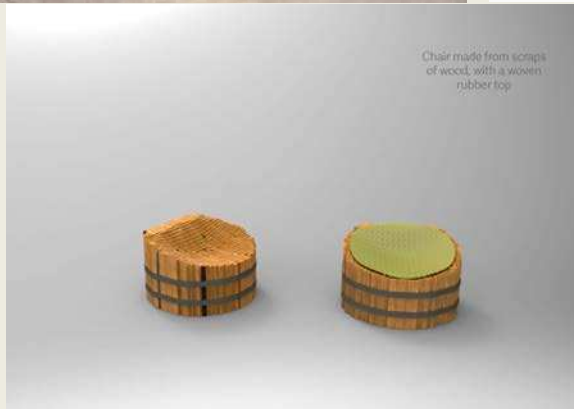


Figure 3.12: Design projects for the use of FSA rubber by Yair Neuman. Anythingby, London, 2014.

3.5.3 The need for further involvement by designers and entrepreneurs

Purchasing the material is a way of encouraging production, promoting relationships between designers and producers, propelling research and helping the producers to deal with production challenges. However, there are still a limited number of designers and companies working with FSA, FDL and other rubbers from the Amazon. Many are the companies and designers who manifest interest in the novelty of the rubber but do not follow the practice due to the challenges that it entails. While for big companies these mean significant investment and actions, for small and micro-entrepreneurs the sheer difficulty of accessing the places can prevent them from starting projects. Even the purchase of the rubber requires a further involvement of the designer with producers, and possibly also with stakeholders.

In my experience, I have observed that, due to challenges, costs and efforts involved in the process, the designers and companies that do not get involved in the sustainable cause of these communities soon give up purchasing the material and working with it. The rubber from the Amazon is, unsurprisingly, much more expensive than rubber produced from industrial plantations. There are also challenges in terms of logistics, timeframes and quality control. This is yet another challenge for the communities, as new markets have proved important for them. But specific understandings of the material, context, the production process and logistics are necessary and contribute to resolving the conditions and capabilities needed for production.

This scenario demonstrates how design for sustainability requires further participation, roles and capabilities on the part of designers. The commitment of designers and companies keen to work in a respectful way with these communities – both directly and indirectly – has an important part to play in the development of economic opportunities, and also in social and environmental values. This process involves a complexity that becomes part of practices for sustainability.

3.6 Artefact of mediation

In the context of this thesis, the artefacts are materials, tools and objects that pre-exist collaboration and also develop from it (Engeström, 2005). Engeström (2005: 10) defines the significance of the artefact (object) in the production activity:

The object is more than a fixed material thing: it needs to be forged, it changes hands, it generates passions and struggles, it is fragmented and recollected. It is elusive, yet everywhere. It is a horizon of possibilities (Engeström, 2005: 10).

It is the artefacts that form the meeting point from which spring the dialogue and collaboration between designer and artisan producers. The artefacts are the reason for the practice and are the mediators of the relationships from which material and immaterial consequences unfold (Kimbell, 2012; Ingold, 2011; Carter, 2004; Engeström, 2001; 1999).

Through the shared artefact, different practices, knowledge and cultural backgrounds gather together. Tensions emerge through the artefact, which becomes the space of negotiation through which proactive engagement provokes questioning and learning,

thus catalysing transformation and new patterns of activity (Engeström, 1999). The examples in this study demonstrate that capabilities also emerge through the selling of the artefacts. The exploration of the materiality of the artefacts is an important element of analysis in this study – not in its form and aesthetical characteristics, but in the roles the artefacts have in promoting collaboration, capabilities and social change, thus impacting on issues of wellbeing.

3.7 Summary

The philosophical and practical theory of capabilities was introduced in this chapter as an ethos to be integrated by designers in their approaches to local producers and production, so that material and immaterial outcomes are considered. The example of the creative integration of the new methods and materials in the production system in the rainforest located the artefacts as a means through which capabilities emerge. Designers appear to be one of the key professionals able to collaborate with local artisan producers on the materiality of the rubber and to help them connect with outside markets. The rubber is the artefact of mediation that allows collaboration and promotes new capabilities, both for the artisan producers and the designer. The following chapter further investigates the interaction between designers and artisan producers, examining the complexity involved in this nexus.

4 Encounters, practices and methods

The experience of designers in different countries of the southern hemisphere demonstrates that the approaches, challenges and processes of the designer within a producer community are similar to those relating to the Amazonian artisan producers. This proves that methodologies aimed at promoting the capabilities of the artisan producers and of the designer are feasible there. However, this chapter also discovers that currently the tools and methods for understanding what goes on between visiting designers and artisan producers within artisan communities are partial and piecemeal.

4.1 Introduction

It may be inferred that designers and artisan producers could, if they chose, create new opportunities for local production that as a result would contribute to the wellbeing of not just individuals but entire communities. Practices incorporating this intention need to be further investigated and analysed in order for it to be possible for all involved to learn from common challenges and opportunities which emerge from this interaction. This chapter examines the involvement of designers with local and small-scale producer communities. It draws on evidence from interviews with eight designers and/or social entrepreneurs about their experiences with artisan producers and their communities in different parts of the world. It also brings in a representative of a rubber-tapping community from the Amazon rainforest, who gave me an interview about his community's experience of collaborating with designers. The interviews were conducted in English with exception of the last, which was in Portuguese. The interviews with the designers were transcribed and summarized in a comparative table in order to facilitate the analysis of the data gathered. The interview with the community's representative provides the content and analysis of Section 4.4.6; this interview was important in order to incorporate the view of someone from

the producer community in contraposition to the designers' voices. It also raised issues not mentioned by the designers. Through the interviews, some challenges and outcomes of the designers and artisans' interactions, intended to contribute to people's wellbeing, are revealed. The discussions that emerged from the designers' narratives demonstrate that this dynamic social process raises complex issues of differences, relationships and network. It also implies new understandings of the significance of design, the roles of the designers and methods applied in the practice.

4.2 Encounters and parallelisms

If fiesta is participation in primordial time – the collectivity literally shares out among its members, like sacred bread, the date being commemorated – craftsmanship is a sort of fiesta of the object: it transforms a utensil into a sign of participation. Octavio Paz, (1987: 60)

Winner of a Nobel prize for literature, Mexican writer and poet Octavio Paz celebrates the object and the craftsmanship as a participatory process. He likens the materiality of artefacts to powerful legal, economic and religious values (1978). 'Craftsmanship is a sign that expresses society not as work (technique) or as a symbol (art, religion) but as a shared physical life', in which a sense of identity, solidarity and ownership unites people (Paz, 1987: 59). He sees craftsmanship as a strong sign of community. He contrasts design and craftsmanship, in which he discusses the meaning of beauty for the mass-produced objects of design in relation to the individual and collective manifestation of the artefacts if craftsmanship produced by local community. He sees the work of local communities as a repository of values, embedding the meaning of the place, the people, their traditions and their views. In contrast, but not in a negative

sense, his view of the beauty of the design was linked to an 'invisibility' of the form and function of the objects (1987, 59).

These ideas lead this chapter into a discussion of the encounter between designers and artisan producers. They bring in the contrast between mass production and local production in two parallel ways, where design and craftsmanship does not meet or mix. Paz brings the sense of meaning and distinction of the local artefacts and the personal character that is transmitted through its physicality (Paz, 1987: 57).

So, what is achieved by an encounter between these two approaches to materials and artefacts? Philosopher Paul Carter (2004:11) asks what collaboration between two different creative practices does to the social, economic, political and environmental debates. Firstly, it is necessary to define who the designers and the artisan producers of this thesis are.

4.2.1 Artisan producer and producer community

Artisan producer is a term that I borrow from Littrell and Dickson (2010) to refer to artisans and producers who are producers of materials and/or local makers – whether traditional or not – who are linked to each other through their cultural practices, materials, tools and the place they live in. This shared context is what I call a producer community. It embeds the sense of community celebrated by Paz (1987), which defines identity, a sense of belonging and participation, and is closely related to wellbeing.

4.2.2 Design and designer

Design professionals need to understand the nature of design knowledge and its concepts, in an era when relations between power and knowledge are changing. (Verran, 2009:15)

The word 'design' is interpreted and applied in different ways. To start with, design is considered as an innate human capacity to prefigure and intervene in the material world, associated with the artefacts that constitute our visual and material cultures, and the aesthetic and functional characteristics of objects (Chick and Micklethwaite, 2011: 17; Fry, 2008: 2; Papanek, 1984). This ability became institutionalized as a disciplinary field and a profession primarily related to mass production and attentive to the demands of the industry through a process of planning, prototyping and realizing. This understanding of the roles of professional designers has changed and expanded. For example, from creators to co-creators and participants (Spark, 2012; Sanders, 2006; Fuad-Luke, 2010), from products to services (Manzini, 2015; Kimbell, 2009) and from attending the interests of the industry to meet the needs of individual people in society (Grout, 2013). According to design Historian Penny Sparke (2012), the end of the twentieth century marked a new era for design, driven by a more holistic awareness of the processes, as well as by 'a radical reassessment of the social, cultural and economic roles of design, permeating theorists, practitioners, educators and the business sector' (Sparke 2012: 180-181). The change in focus from designing products to designing processes, strategies, interactions and actions leads to the insight that there are many outcomes and implications in the design process, that it is multiple and can be shared. This study emphasizes this approach to design and intends to

contribute to an enhancement of the capabilities of professional designers to act more holistically and in the flow of the interactions, as suggested by Grout (2013).

4.2.3 On the complexity of design and the designers' roles

Two definitions of how design and designers operate proposed by design researcher Lucy Kimbell (2012) embrace the complexity of design processes. Kimbell suggests a comprehensive view of design through two mutually structured ways: 'design-as-practice' and 'designs-in-practice'. The first, design-as-practice, considers the both embodied ways in which the designer acts, and the 'set of material and discursive practices which are enacted during design activity', which includes artefacts that are used and created in the design process (2012: 135). The second concept, designs-in-practice, comprises the plurality of the activity, arising from the understanding that design is never complete and never discrete. The concept considers the endless nature of the design process, even when the product has been handed over to the end user. 'Through the engagement with a product or service over time and place, the user or stakeholder continues to be involved in constituting what design is' (Kimbell, 2012:135). The concepts of design-as-practice and designs-in-practice eliminate the reductionist idea of design as a problem-solving activity by attempting to identify the processes, elements and actors that are integral to the practice. This notion of designs-in-practice, which is a relational, interactive process, resonates with the Activity Theory (Engeström, 2001) presented in Chapter 5, and which goes on to become a central part of this thesis, exploring the relationships mediated by artefacts (tools, objects, products).

Kimbell's dual definition of design as both design-as-practice and designs-in-practice adds a broader understanding to this process, which continues beyond time and the artefacts. Collaboration and co-creation through the artefacts and their productive process leave a legacy (Behar, 2011) that is transformed throughout time. Design is a continuum that exists through the designer but is also independent of the designer; it is related to the materiality of the artefacts and the consequences for all concerned, from the producers and users to the natural environment and the network involved (Kimbell, 2012; Carter, 2004). The complexity of the processes involving designers and community members comprise many factors, elements and people.

For Manzini, the cross-practices and networked relationships (or coalition) involved in social innovation processes outline two overarching roles for the designer (Manzini, 2015:52): the first, to trigger social innovation by 'introducing ideas and visions to feed and orient coalition'; the second, to facilitate people's participation in the network of relations by making the best of their skills and develop new ones. In this, designers can mediate relationships within the network of relations, facilitating access to markets and promoting broader collaborations. Within this framework of social change and sustainability, design becomes an open-ended process which is continuous, spread among the parties involved, dialogical, collaborative and mutable (Manzini, 2015; Kimbell, 2012). Thus, the design process exists independently of the designer, but is 'distributed across a number of different people and artefacts that together enact designing and designs' (Kimbell, 2012: 132). Within this network, Russ (2010:102) suggests a leadership role for the designer, not in a controlling sense but in the need

for the profession to orchestrate connections that integrate labour, production methods, materials, actions and strategy for the realization of a project.

Kimbell (2012: 135) considers that design-as-practice and design-in-practice opens design practice to other professionals, organizations, communities and users, who are thus considered participants in the design process. This idea enriches the understanding of design as a process of multiple collaborations that involves a broader network of relations in which diverse backgrounds, voices and roles participate in the realization of collective and individual agendas. The definitions and considerations of the roles of the designer and the complexity of the design process lead to the perception of the designer as a multifaceted professional who participates in a complex networks of relations that encompass clients, institutions, communities, cooperatives, producers, industry, and everyday situations in which design emerges – in fashion, crafts, and products, among others.

4.3 From mass production to small-scale approaches

Since the late 1960s, debates on economic, political, social and environmental changes have increasingly influenced design approaches to production and society. Austrian design activist and educator Victor Papanek was outspoken in his criticism of the social and environmental damage caused by mass production in his book *Design for the Real World: Human Ecology and Social Change*. According to him, this problem was partially led by irresponsible choices and decisions by professional designers. As an antidote to this scenario, Papanek (1984) invited designers to adopt a human approach focused on

people's wellbeing. As part of that, he recommended that designers should become engaged in the situation of local communities in the developing world (Margolin, 2007; Papanek, 1984). Many authors have also reflected upon the necessity to redirect technological approaches from the gigantic proportions of industrial production to the individuality of small-scale production plants, including Schumacher (1973); Max-Neef (1991); Illich (1973); and French philosopher Felix Guattari (1st edition in 1989 – 2000: 28):

The only true response to the ecological crisis is on a global scale, provided that it brings about an authentic political, social and cultural revolution reshaping objectives of the production of material and immaterial assets. Therefore this revolution must not be exclusively concerned with visible relations of force on a grand scale, but will also take into account molecular domains of sensibility, intelligence and desire. Guattari (2000, 28)

However, these authors do not address the idea of an integrated market that could enable small producer communities to earn a living from their local and cultural skills, knowledge and resources. Poverty still dominates great part of the world as a result of labour exploitation and the lack of opportunities. This is the problem of many small communities whose productive activity is reliant on the market and commerce – to sell goods; the money in turn should provide opportunities for development and wellbeing in communities. But this is not always the case, as discussed in Chapter 2, in which rubber-tapping communities, without a market, have moved from being exploited to being forgotten. Neither situation provides them with the minimum conditions to live a life with dignity. In face of these problems, how can commerce, and the role of design in that, be part of a different set of relations involving small producers and an outside market? How can design aid the development of opportunities?

4.3.1 Design and business approaches to producer communities

Awareness of consumers, professionals and companies towards social and environmental issues has intensified from the 1980s and, consequently, promoted gradual changes (Littrell and Dickson, 1999: 9). As design is intrinsically associated with the industry, modes of production and consumers, it is historically related to a business approach to products and production. For instance, social entrepreneurship, which began in the 1980s and became established from the 1990s (Dees and Anderson, 2006: 41), evolved as an approach through which design has been employed in order to support and create further opportunities for local producer communities. Fashion activism around social and environmental issues also began to grow in the 1980s (Black, 2008, 18–19). Katharine Hamnett was a pioneer in the active engagement of fashion in political debates such as pro-human rights and promoting changes in environmental policies related to the production of commodities for and by the fashion industry since the 1980s (Black, 2008, 32–37). Fair trade became an important model of social entrepreneurship from the late 1990s in its intention to establish a set of parameters of social responsibility concerning the conditions, treatment and economic return to producer communities of materials and goods. A range of fair trade certifications was created to regulate standards in the production chain, including the work of artisans serving the fashion industry (Littrell and Dickson, 1999: 6). Some examples are: Fairtrade Foundation, World Fair Trade Organization (WFTO), Rainforest Alliance, Fair Mined, Alliance for Responsible Mining (ARM) and Good Weavers. The emphasis is on businesses' good practices and the regulation of production chains through social and environmental policies (Fairtrade Foundation,

2014). A common ground is to promote fairer relationships and prices in the trading of local products (Black, 2012; Parker, 2011; Littrell and Dickson, 1999; Martin and Osberg, 2007). This growing approach, whether or not involving certification, has also started involving designers in the situation of artisan producers. From the late 1990s, the concept of social innovation extended the idea of social entrepreneurship to all kinds of strategies, products and initiatives that innovate in order to promote social change (Dees and Anderson, 2006: 39; Manzini, 2013). Social innovation has been widely promoted in the field of design for sustainability, reinforcing the roles of the designer and indeed design itself within society.

Amongst these approaches and others, design has been seen as means for contributing to the development of capabilities that enable local artisans and producers to embrace new economic and social opportunities. The involvement of a designer within a producer community can range from ethically sourcing materials to applying traditional and non-traditional handcrafts, as in clothing, jewellery, furniture and product design. Fletcher (2013) lists some of intentions and outcomes of this mindset:

The local agenda is concerned with enhancing diversity, celebrating traditions, building communities, creating meaningful employment and respecting local environment conditions – it is a combination of body, mind, objects, knowledge, philosophy and action (Fletcher, 2013: 173)

Littrell and Dickson (2010: 99) believe that by taking part in a project, artisan producers in regions of social and economic differences can have a greater chance of making changes in their lives. Borges (2011a: 5) likens the increasing involvement

between designers and local artisans producers to a 'quiet revolution', as it has promoted individual and collective transformations. However, Borges also comments that many challenges have emerged and mistakes have been made (2011a: 5); therefore, design and design education still needs to further understand this practical approach, necessitating the development of further theories and methodologies (Borges, 2011a: 5; Verran, 2009: 14).

4.3.2 Rediscovering the value of local materials and cultural heritage in the Brazilian context

In the late 1970s, the ideas of 'design for development' became linked with the industrialization of the developing countries (Margolin, 2007: 111). This idea was incorporated into, and thus enhanced, the 1960s concept of design education. The history of design education in Brazil exemplifies the notion of design for development linked to mass production in which local materials, especially handcrafted items, became known as expressions of folklore. The inheritance of the functionalist tradition set up by the Ulm School, in Germany, meant that the desire to compete within an international market became an obstacle in the construction of a national identity for a Brazilian designers. This mentality echoed a sharp division between design and the myriad aesthetic expressions spread around the country. The different identities of the national culture were ignored in favour of an international style that attended to the interests of a national industry (Borges, 2010, 2011a, 2011b; Homem de Melo *et al.*, 2008; Niemeyer, 1998).

From the late 1990s Brazil experienced a range of economic and social changes.

On the one hand the economy became more open to external markets and investments; on the other, public politics stimulated the internal market and social development. For example, through financial incentives for low-income families in the exchange of education for their kids (the *Bolsa Familia* Programme)²² and through a myriad programmes dedicated to stimulate local initiatives and local producers. This enabled the development of social innovation research and projects, a re-discovery of local expressions and creativity, and a reinforcement of local identities allied to a strengthening of local economies. These social and economic changes have generated a new perspective on local cultures, materials and craftsmanship. In this process, encounters between designers and local artisan producers have aided the construction of an aesthetic identity of design, bringing further recognition to local cultures and promoting new capabilities –for both artisans and designers.

The amalgamation of design aesthetics with a variety of local materials and aesthetic expressions has underpinned unique components of contemporary design in Brazil since the mid-1990s. This is manifested through the use of materials, handcrafts, colours and styles found in everyday life throughout the country. This renewed approach was not solely aesthetic, but emerged from the increasing recognition of the initiatives, both bottom-up and top-down, to promote social change. Nowadays design is recognised as means of supporting and promoting the work of local communities.

Social innovation can be observed in numerous projects involving designers as

²² *Bolsa Familia* [Family Allowance] provides financial aid to poor Brazilian families with the condition that children must attend school and are vaccinated.

consultants. Materials and handcrafts produced by local communities have been highlighted through collaborations with designers.

In 2004, Brazilian designer Cristiane Dias created the Rupestra collection with local artisan producers from Serra da Capivara, Piauí, in northeast Brazil; it amalgamated historic heritage, local materials and local skills in a series of ceramic objects (Cristiane Dias, 2014). This collection became famous in the country and increased tourism in the region. Since then, the artisan producers have increased their sales both autonomously and through Dias's link with a design market, more jobs have been created in the region and the production has become more professional. Through design and crafts becoming thus interwoven, socio-economic value and symbolic value were created.

Panel 4.1: Cristiane Dias

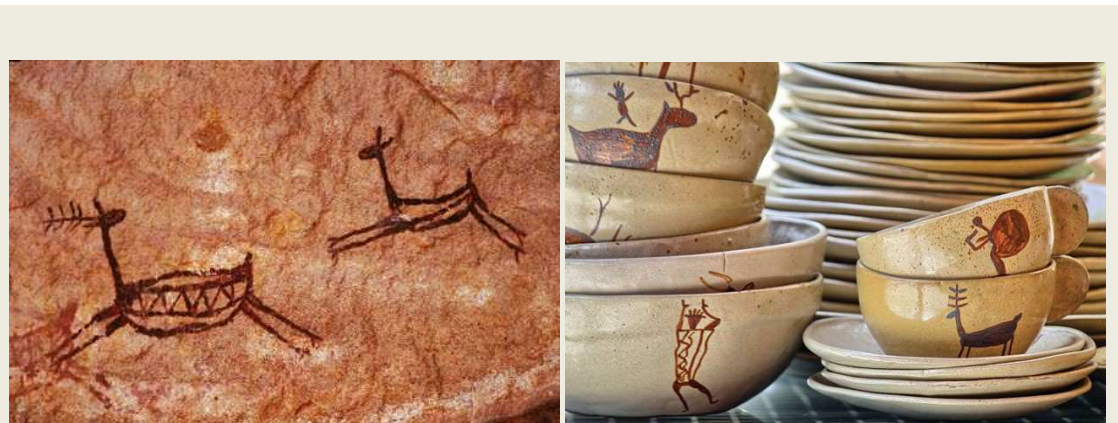


Figure 4.1: Kitchen utensils illustrated with motifs of local rock paintings.

Designer Renato Imbroisi has pioneered a consistent collaboration between designer and artisan producers in Brazil since the 1980s. He initially wanted to work with traditional weaving techniques from Brazil, as a result of meeting the artisans in a critical situation and seeing the craft of weaving disappearing. He diversified their production by applying the same techniques to a wide range of products. He also suggested the application of natural seeds and other local materials in the weaving, thus generating new and original patterns. By working in this way, this designer linked the weavers' output with an urban interior design market (2012: 47). This solo designer became a social entrepreneur who has engendered a repositioning of the work of hundreds of local artisan producers in the national and international markets (Panel 4.2).

Panel 4.2: Renato Imbroisi and artisans

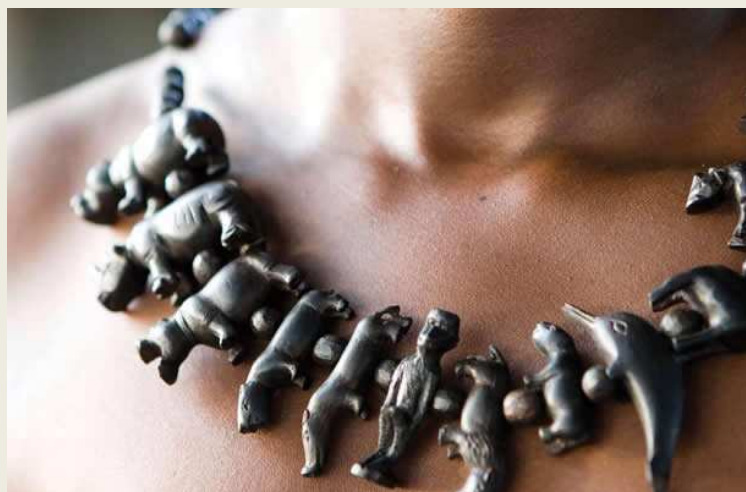


Figure 4.2: Imbroisi working with artisans of the Bordana cooperative in Brazil. Figure 4.3: Necklace by African artisans. Figure 4.4: *Desenho em Fibra* [Drawing in Fibre] Exhibition.

In the area of fashion, Brazilian designer Ronaldo Fraga works with several artisans in Brazil to design his collections. His work emphasizes the sense of place and cultural identity through the artistic application of local handcrafts linked with cultural references.

Brazilian designers such as Heloisa Crocco, Luiz Galvão, Janete Costa and the Coopa Rica local cooperative in Rio de Janeiro have benefited from a reappreciation of national handcraft techniques that is part of the Brazilian identity (Borges, 2012; 2011b: 5). This hybrid of design and crafts has resulted in product, fashion and jewellery. Beyond the aesthetic value, the alliance between design and crafts became recognized as strategy to create and enhance socio-economic, environmental and symbolic values.

Brazilian fashion designer Ronaldo Fraga (Panel 4.3) draws strongly on local references and handcrafts to help develop his collections. However, although he works with artisans, this does not mean that those artisan producers are the final producers or (co)creators of the collection. Through his design, Fraga creates new aesthetic value, reinventing the sense of identity and place of the local handcraftspeople. I see this kind of approach as valid and able to generate both financial and symbolic value to the artisan producers.

Panel 4.3: Ronaldo Fraga



Figure 4.5: Ronaldo Fraga's summer collection 2011 in the São Paulo Fashion Week, Brazil.



Figure 4.6: Ronaldo Fraga's winter collection 2014 in the São Paulo Fashion Week, Brazil.

The thinking behind this marrying of skills is the belief that designers can support creative initiatives in the hope of aiding the development of markets for local and small productions. This has proved to promote a whole national market based on local products, which nowadays, through design, could drop their limiting touristic and folkloric connotations, even though still deeply embedding the identity of the place. The use of materials and local technique has also lent a distinction to design products. Although these practices have brought recognition to the Brazilian design sector and elsewhere, that recognition has only recently begun to penetrate academic discussions. The evident transformation of the design scenario in Brazil clearly demands a change in design education in this country, in that although design and crafts are not the same, they can come together in an intersection that has proved to generate new capabilities for both artisan producers and designers through the construction of new and joint skills, aesthetics, social and economic opportunities, knowledge and identities.

4.4 Eight collaborations from elsewhere

*We don't want the fair trade, we want everything to be fair.
This is the transformation where I put my heart on.
(Judith Condor-Vidal to Amadeu, 2014)*

In order to further examine the implications and challenges experienced by designers working with artisan producers in their local context, eight designers and/or social entrepreneurs were interviewed. The semi-structured interviews had the objective of revealing the common challenges, benefits of the practice and roles performed by the designers in their collaborative approaches to local artisans. Fashion is one of the more

prominent areas that is approaching sustainability from a perspective of small-scale production, and this is highlighted in this chapter through the interviews. Fletcher suggests that this approach to *localism* can foster distinctiveness in fashion and textiles (Fletcher, 2013: 168).

The interviews provide a view of the artisans and designers working together in socio-cultural contexts other than in Brazil. Thereby it gives hint of the similarities in the aspects of the practice as well as different views and particularities. Unfortunately it was not possible to interview the artisan producers working with the designers, which limits the stories of those interactions to the designers' points of view. Nonetheless, Section 4.4.6 of this chapter, and Chapters 6 and 7, bring to the fore artisan producers from the Amazon rainforest.

4.4.1 The designers and their approaches

A brief introduction to the interviewees follows below. They all work in the area of fashion and were interviewed between 2013 and 2014:

Judith Condor-Vidal (2014) is a Bolivian economist, the founder of Trading for Development, whose social enterprise brings local fair trades from developing countries such as Peru, Bolivia, Bangladesh and Ecuador to a British and European market. Her business exemplifies a mix of bottom-up-top-down social innovation and entrepreneurship, resulting as it did from initiatives by local artisans, who gathered together to send her boxes of samples of their work in the hope that she could sell

their products in Europe after the success of an exhibition that she organized.

Nowadays, the artisan producers that supply the Trading for Development operate within the certification of the World Fair Trade Organization (WFTO).

Lynda Grose (2013) is a British designer, an educator at California College of the Arts (CCA) and an author. She has been working with numerous communities in Romania, Peru, Kyrgyzstan, Kazakhstan, America, Armenia, Ecuador and Ghana. In 1992, Grose cofounded ESPRIT's ecolection, which became known as the first ecologically responsible fashion collection developed by a major corporation.

Anna-Maria Hesse (2014) is one of the owners of the Here Today Here Tomorrow fashion design label (Panel 4.4), a studio shop in London. The brand exemplifies a small business led by social and environmental principles, as discussed in Chapter 3 (Section 3.5.2). The designers have been working with a WFTO fair trade²³ cooperative Association of Craft Producers (ACP) in Nepal, which employs mostly women whose skills are in hand-knitting, hand-weaving and block printing. The designers travel regularly to Kathmandu, where they work with the local artisan producers of a local cooperative.

²³ Fair trade's aim is to link local producers with retailers' and consumers' goals in a logic of a fairer global market in which ethical principles should be part of all phases of the business, from the harvesting of raw materials to the shops and stores. This certification and others similar, such as those by the Fairtrade Foundation, the World Trade Organization (WFTO), the Rainforest Alliance, Fair Mined, the Alliance for Responsible Mining (ARM) and Good Weavers, emphasizes businesses' good practices – that respect human rights and dignity – and regulate production chains through social and environmental policies (Fairtrade Foundation, 2014; Black, 2012: 203). These standards vary of course according to the association (Parker, 2011: 10), but a common ground is to promote fairer relationships and prices in the trading of local products. In addition, one of the core policies of Fairtrade is to build capacity among producers comprising, for example, the development of interpersonal, communication and business skills (Black, 2012: 203; Littrell and Dickson, 2010: 99; 1999: 4–5).

Panel 4.4: Here Today Here Tomorrow



Figure 4.7, 4.8 and 4.9: Artisans' work in Nepal. Figure 4.10: Designers Julia Crew and Anna-Maria Hesse with artisans in Nepal (HTHT, 2013). Figure 4.11: HTHT shop in London, 2014.

Isabell de Hillerin (2014) is a German fashion designer who wants to preserve her Romanian cultural heritage by working with traditional textile and embroidery techniques, which are on the verge of disappearing. Since 2009, she has been collaborating with groups of five to ten women from Moldova and Romania. The artisans are generally housewives who work in order to supplement their income. The designer uses techniques of embellishment combined with a minimalist aesthetic to produce her fashion collections (Panel 4.5).

Sophie Mason (2013) is a fashion designer whose brand, Still Ethical, is focused on eco-friendly and vintage clothing. She plays with the idea of ‘fusing cultures’, combining antique textiles with traditional Indian handcraft techniques such as embroidery, weaving and natural dyeing.

Carry Somers (2014) is a British entrepreneur, fashion designer and activist. She has been promoting sustainable practices in the fashion industry since 1992, and in 2013 she founded the Fashion Revolution movement in order to promote the view that fashion can be ‘ethical and fair’. Her fair trade enterprise, Pachacuchi, sells Panama hats and other fashion accessories made by local artisan producers in Ecuador, to top luxury stores throughout the world; Somers has measured its socio-economic and environmental performance since 2009 (Panel 4.6).

Panel 4.5: Isabell de Hillerin



Figure 4.12: Artisan from Romania



Figure 4.13: 2013 collection pieces

Dilys Williams (2013) is a fashion designer and the current director of the Centre for Sustainable Fashion (CSF) at the London College of Fashion. She created the Shared Talent project to encourage exchanges between students and artisan producers in developing countries such as South Africa, Ghana and India.

Jocelyn Whipple's (2013) speciality focuses on the fashion and textile industry in the field of social and environmental sustainability. She is cofounder of the Fashion Revolution Day, together with Carry Somers; she has worked with Katharine Hamnett on other projects in different countries, including an experience with vegetable leather in Brazil.

4.4.2 Issues of difference

Political empowerment, and the enlargement of the multi-culturalist cause, come from posing questions of solidarity and community from interstitial perspective.
Bhaba, 1994, 3

Table 4.1 sets out the locations where the practices reported by the interviewees took place.

Table 4.1: List of interviewees

No.	Designer / Brand or Project* ²⁴	Location of project(s) or practice	Website
1	Anna-Maria Hesse / Here Today Here Tomorrow	Nepal (since 2009)	http://www.heretoday-heretomorrow.com/
2	Carry Somers / Pachacuti	Ecuador (since 1992)	https://www.panamas.co.uk
3	Dilys Williams / Shared Talent (Project)	Johannesburg (2007), Ghana (2008) and Delhi (2009)	http://sustainable-fashion.com

²⁴ All the interviews were conducted between 2013 and 2014.

4	Isabell de Hillerin	Romania (since 2009)	http://www.isabelldehillerin.com
5	Jocelyn Whipple	Brazil, Nepal and China	http://www.jocelynwhipple.com
6	Judith Condor-Vidal / Trading for Development	Bolivia, Peru, (since 2004) Bangladesh, Ecuador, India and African countries	http://www.tradingforddevelopment.co.uk
7	Lynda Grose	Kyrgyzstan (1992), Kazakhstan (1992), USA, Armenia, Ecuador, Romania, Peru and Ghana	https://www.cca.edu/academics/faculty/lgrose
8	Sophie Mason / Still Ethical (since 2004)	India (since 2008)	http://stillethical.com

The designers come from different places: Condor-Vidal is from Bolivia, de Hillerin is German-Romanian, Grose is British, and the others are European, mostly British. The table shows that they work in developing countries, with social, economic and educational disparities. This immediately brings up issues of difference in the interactions, which are exacerbated by the addition of differences in language, nationality, religion and cultures between the parties: social rules regarding gender, social class, the economic situation and the educational background are some of the disparities often present in this approach, and this problem became evident in most of the interviews, even in those carried out in the interviewers' countries of origin; in a national context and sharing the same language, differences still exist.

Issues of differences are important to highlight, as they generate a range of assumptions in their disparities and convergences. For example, while the artisan producers lived and produced in areas considered as disadvantaged due to socio-economic conditions, the cultural, skilled abilities and natural resources they gave to

their products lent an advantageous distinction to the work of the social entrepreneurs and the designers within a saturated global market. Scholar of post-colonial studies Homi Bhabha (1994: 2) argues that the social articulation of differences 'is a complex, on-going negotiation that seeks to authorize cultural hybridism that emerge in moments of historical transformation' (Bhabha, 1994: 2).

While language came across as a barrier, mutual understanding and mutual learning were expressed by seven of the interviewees against cultural differences. The interviewees' narratives provided the understanding of handcrafts as means of communication, transcending linguistic, cultural and socio-economic / political barriers. Three of the interviewees pointed to language as major barrier, but two of them felt that through collaborating on the artefacts they could overcome this limitation. But of course speaking the same language does mean a better connection through dialogue and therefore a better learning from the people giving their information and opinions.

The significant information that emerged from that was that the artefact came across in the interviews as the mediators of the relationships; this became more evident in the interviews in which the designer and artisan producers did not speak the same language. Two of the designers saw the artefacts as a means of communication, as through them they could relate to and share ideas with the artisan producers in a better way than through the intermediation of the translator. Overall, the artefact became a meeting point where the designer and the artisan producers met in dialogue and collaboration through creation. This was articulated in all the interviews, shown by

examples in which empathy seems to have flourished through the materiality of the artefacts, which enabled the differences to be smoothed out through collaborative exchanges and mutual learning.

Awareness of the differences appears to be of great significance for sensitive and responsive approaches. Beyond socio-economic and cultural differences, there are also differences in practices and agendas. These may be aligned through dialogue in order to avoid frustrating expectations. Verran (2009) observes that tensions that emerge in this context brings to the fore the dilemma of the differences. This can open up a generative process or can, in contrast, cause separation and the failing of projects (Verran, 2009, 14–15). Another important aspect to take into consideration is the fact that the interaction between the designer and the artisan producers within social innovation and social entrepreneurship is not imposed on them; there is already an inherent desire and a motivation to work together, and there are multiple relationships that involve other professionals, community members and the outside market.

Politics can also interfere with the processes of social entrepreneurship, the tensions produced by power relations taking different forms. One of the interviewees told us about her difficulty in working with the local artisan producers, because local intermediaries used to control the sales of the local products, blocking any direct relationship between her and those producers. So, up to what point can an intervention by a designer and other stakeholders be favourable – or otherwise – in such a scenario? In this particular case the intention of the social entrepreneur was to

stimulate changes in the exploitation imposed on the producers, and that appeared to have succeeded, through a continued and long-term relationship with the artisan producers, who are now organized in fair trading. Political issues can also arise – as reported by two interviewees – when cooperatives keep changing their administration system, making continuity difficult. As far as the designer is concerned, it can also be a challenge to develop continuity of work due to limited funding and to political decisions from clients and institutions which may interrupt actions and projects with a certain community.

4.4.3 Identity and ownership

A new aesthetics of experience is emerging. It may challenge the aesthetics of traditional design. It will be relevant to the needs of everyday people and resonant with their dreams (Sanders, 2006:32).

A somewhat nebulous issue that needs to be brought into the limelight relates to the identity and ownership of local artefacts where traditional techniques and artefacts, or a strong sense of authorship, exist. Whipple (2013) argues that the designer should look at

the sense of place within the makers' community' in order to perhaps be able to offer something beneficial and possibly more 'sustainable' both to the community and to our modern way of consuming design.

She questions whether the simple appropriation of local handcrafts by a designer can do anything for the artisan producers. She points to a displacement of the local into a meaningless design, on of which the unique local character of the products is converted into something anonymous, suitable for a mass market. This can also refer to the importance of respecting local creativity and aesthetics that is related to the

sense of ownership. I have seen beautiful work made through collaboration between designer and artisan that did not give the worker any satisfactory feedback, as the artisan did not recognize themselves in the work. Behar emphasises that the artisan producers should be considered partners in projects in which they feel and share a sense of ownership (Behar, 2011). However, this discussion is more complicated, related as it is to material reward in proportion to the value created, the cultural background, the placement of the products, the power relations involved and therefore to the capabilities of the parties involved. This imposes a tension on factors such as the sense of identity and ownership within the collaboration between designer and artisans.

While results of the collaboration between the designer and the artisan producers can highlight the cultural relevance of the artefacts and contribute towards preserving local identity, some approaches can just accord with the designer's expectations producing artefacts in which the artisans do not recognize themselves, thus being insignificant in terms of meaning. It cannot be a generalization, as it also depends on the intention of the work, the ethics and the alignments of the common objectives. Thus, the question arises as to whether the designer is serving to enhancing capabilities. On the other hand, a hybrid between design and crafts opposes the idea of a diversion of tradition in which local identity can be preserved and translated through design to other markets.

4.4.4 Witnessing capabilities

Five of the interviewees have worked for many years with the same artisan producers and communities. As might be expected, those with continuous working relationships were able to provide a more comprehensive view about individual and collective transformations throughout the years. Conversely, the designers who had not had a continuous interaction with the same group struggled to analyse the interaction in terms of implications and consequences, seeing that as a shortcoming. All the designers pointed to similar kind of challenges related to timeframe, quality control and difficulty with communication, transport and logistics. However, those involved in continuous working relationships with the makers considered that by learning from each other about work routines, local difficulties and market requirements in terms of finishing and quality, they could make adjustments between them to find a balance. In this way, they also reported having changed the way they worked, maximizing the use of the local skills in their creations and collaborations, and planning their production schedules in advance. Meanwhile, artisan producers were able to adjust their completion times and establish someone as a contact point between the designer and them while not working together. In the case of Pachacuti (Panel 4.6) and Trading for Development, the artisan producers became organized in fair trade, developing interpersonal skills to deal with collective production and logistics. According to Condor-Vidal (2014),

Groups have to organize themselves and share responsibilities. As the money is paid to the group, they have to invest the money back to the community, and to participate in decisions. It is challenging and there are problems, but they develop lots of interpersonal skills: They learn to talk and express themselves (...) and to take care of the work, not in a dependent way (Condor-Vidal, 2014).

Panel 4.6: Pachacuti

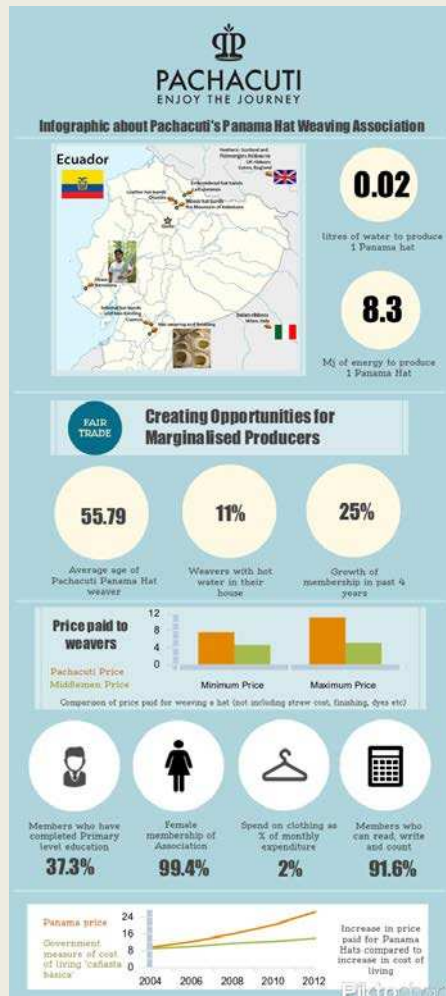


Figure 4.14: Infographic 2012, Pachacuti, (Pachacuti – Products and Producers, 2014).



Figure 4.15: Artisans producing Panama hats in Ecuador



Figure 4.16: Radar chart comparing Pachacuti's socio-environmental performance in Ecuador (Somers to Amadeu, 2014).



Figure 4.17 and Figure 4.18: Somers and artisans working together in Ecuador (Pachacuti, 2014).

Meeting production deadlines was a challenge for most of the designers; five of the interviewees said they prepare their collections in advance, allowing the artisans time to produce and ship the products. The designers need to factor in the possibilities of the different work paces in the varying communities as well as unpredictable and unforeseen problems. Mason preferred not to constrain her work by following the fashion industry's schedule, choosing not to conform to seasonal collections.

Some of the designers who have been working with the same artisan producers for many years found that the issues around quality control and lead time gradually diminished as both parties found a way of working together which met each other's needs.

You have to understand that their time scale, quality standards are different. They also have to understand what is acceptable by the international market. With time they begin to understand price, value, time and quality. This you have to teach, but also have to comprehend their lifestyles. Some women, for example, need to take care of the family, the children, the house, etc. (Grose, 2014).

Most designers in a long-term relationship with their artisan producers perceived that the relationship encouraged the development of more autonomous production; for example, they observed producer groups organizing themselves into cooperatives or small businesses. The development of interpersonal skills to communicate and deal with new logistics procedures was seen as an important contribution of the interaction with the designers rather than direct work on the artefacts that were already part of the artisan producers' lives. However, the designers also affirmed that the challenges

are mutable and constant, the needs change and with them new learning and strategies are needed.

Social inclusion and gender issue came across through handcraft activity as a powerful empowerment tool in which women and younger generations were highlighted.

Although both men and women were involved in the work with the designers, the majority in the groups that made artefacts were women. Also, by seeing their parents or mother benefiting from their handmade work, older children became interested in learning traditional weaving techniques and supporting them on the logistics and communication side of their business. There is a sense of pride that seems stronger when the artisan producers feel that their local identity is recognized and reinforced.

These examples make it clear that capabilities, hence wellbeing, are seen as more important than income generation. The expansion of capabilities never seemed to relate to any single individual, but extended from the artisan producers to their family and their community; for example, the interviewees observed that a consistent outcome of the artisans' work is the possibility of their being able to provide education for their children and provide better conditions for them. As outcomes of the interactions, narratives exemplified the generation of symbolic value in which the artisan producers gained more respect and admiration from family and other community members. As a consequence the artisan producers have influenced other local people and family members to learn and get involved in the work.

4.4.5 Designers' capabilities

A key insight was that this type of work appeared to develop the designers' awareness of the social implications of their work. In the majority of cases the designers talked more about the impacts of these encounters in relation to themselves, reporting that once they got to know the artisan producers and their local contexts the exchanges challenged the way they used to design. Overall, the designers reported an internal transformation that resulted from their experiences, which, according to Grose (2013), led them to rethink priorities – indeed, to rethink their own life.

These experiences seem to have not just affected the way these designers did their work regarding social concerns, but also improved their ability to collaborate, lead and support local initiatives. It can reasonably be inferred that the interviewees also found their capabilities enhanced; the obvious consequences of the interaction were the generation of social capital through the construction of trusting relationships, and the connection of the local artisan producers to an extended network that facilitated actions and the realization of capabilities.

4.4.6 Relationship issues

In the interviews, the designers generally did not mention their personal relationships with the producers they worked with. Borges points out that even approaches which are morally motivated can fail in their outcomes (2012, 138). In her PhD thesis,²⁵ Eva

²⁵ Reijonen, E (2010). *Enhancing the capabilities of small producers in developing countries to meet global challenges: an investigation into the contribution of international craft development initiatives*. Robert Gordon University, Aberdeen.

Reijonen of Robert Gordon University, Aberdeen (2010) also questions and reflects on the assumption that a relationship between designers and craftspeople can enhance the capabilities of artisans and their communities (2011, 95). Her personal experience as a design consultant working with local artisans in Mozambique and Vanuatu demonstrates how interactions between a designer and a community can fail (2010, 119). Apparently one of the problems she experienced was a conflict of interests; instead of working together, she and the artisan had different agendas. She considers that a number of interactions failed because the artisans did not like her idea and refused to work with her. She had (2010, 119) encountered a series of practical challenges, the major one appearing to have been based on communication and their cultural backgrounds:

I promised to pay the carver ten times more than what he earned for the dolphins. This idea was rejected. He looked at the image and refused. When I asked why he had declined it, he said he did not like the carving and thought it was ugly.

This example demonstrates how the artisan's motivations were not related to an economic factor. From reading her research, I noted that she had been sent to work with the artisans as a design consultant from a local institution, and it became apparent that the artisans were not interested in working with her, as her interactions with the artisans appeared to be solely on her terms. Reijonen's (2010) thesis makes an interesting contribution to the area of social design, as it brings to light problems that seem to be more common than reported.

In 2014, I interviewed a representative of a community cooperative of a rubber-tapping community also producing coloured rubber in the Amazon rainforest. She

reported that the community had suffered a harmful experience with a designer with whom they worked in a project for the development of local products; the problems ranged from the behaviour in the relationship between the designer and the artisan producers to the use of inaccurate and unauthorized information by the designer in publications. Although this experience frustrated the artisan producers, leaving them feeling vulnerable and emotionally hurt, she told me that they are still keen to develop projects with other designers; they had experienced good collaborations before, and they believe that partnerships with designers can be beneficial for their community. She exemplified that a designer who had used to buy their coloured rubber once visited them with a plan to stay for five days; they got on so well that he extended his stay and community members worked together with him for in creative workshops for twenty days; from this collaboration the ownership of the results was entirely given to the artisan producers. They felt satisfied with the outcomes and the work experience with this designer.

The quality of the relationships is an important fact to be taken into consideration. I thought it surprising that none of the designers spoke about challenges in their relationship with the artisan producers. The examples above demonstrate that the quality of the relationship between the designer and the artisan producers influence the success of the collaboration and the perception of the outcomes of the interaction. This appears to be an obvious claim; however, as indicated by Borges (2012; 2011a), it seems that many inconsistencies in the design approach to local artisan producers occur due to a lack of understanding both of the designer's roles, and about the common objectives of the practice. Psychologist Vygotsky (1978), who is the father of

Activity Theory (Chapter 5), emphasises the relevance of the quality of the relationships, which provides a sense of community for learning and perception of the world through which meaning is constructed. Trust, empathy, friendship and a sense of belonging play a crucial role in the collaboration between the designer, the artisan producers and their community (Grout, 2013); they form a subtle factor that can nevertheless determine the success or the failure of the encounter between a designer and artisan producers.

4.5 Hybrids

Current post-colonialist studies focus on the comprehension of the impacts of the European imperialism in the formation of socio-cultural, political and economic formation of the colonies. It looks at global and local influences. It attracts criticism on issues of differences and philosophical reflection related to the structures of knowledge, which comprise languages, translation, aesthetic values, cultural influences and literature production, among others (Heloísa Gomes, 2011; Bonnici, 1998, 9–10). Post-colonial studies contribute to the discussion about the encounter between designer and artisan producers by introducing a critical awareness of the issue of differences. Post-modernist logic dissolves clear divisions and again, design and crafts (and also arts) share a common space (Rees, 2010: 135). Cameroonian philosopher Achille Mbembe postulates a view that the ‘interlace’ of cultural differences constitutes our globalized world, where paradoxes coexist (2008:12). This idea of a multicultural coexistence is the opposite of cultural stagnation, but also arouses awareness of the implications of the differences that coexist and interact in a

local and global level of a pluricultural world (Ihde, 1992). According to Bhabha (1994: 2):

What is theoretically innovative, and politically crucial, is the need to think beyond narratives of origins and initial subjectivities and to focus on those moments or processes that are produced in the articulation of cultural differences.

Bhabha (1994) considers that the differences coexist in time. The designer and the local producers meet through the artefacts and, as a consequence, beyond it. Instead of the persistence of tradition as fixed 'pre-given ethnic or cultural traits', it can be used as a resource for social reinsertion and cultural engagement (Bhabha, 1994: 1–2):

These 'in-between' spaces provide terrain for elaborating strategies of selfhood – singular and communal – that initiate new signs of identity, and innovative sites of collaboration, and contestation, in the act of defining the idea of society itself (Bhabha, 1994: 1-2).

This viewpoint of the synergy of the 'beyond' and the 'in-between' suggested by both Bhabha and Mbembe (2008) offers insights regarding social change. They perceive the multiple exchanges and the cultural integration that occur within the practices of collaboration. It adds a further layer of understanding to Borges (2012), who suggests that the alliance between designers and artisans is a meaningful phenomenon of cultural transformation (Borges, 2012: 137). The collaboratively constructed artefacts communicate local expressions of cultural significance and globalized understandings, while embedding social and economic impacts (Borges, 2012:137; 2011a). These encounters of the global with the counter-global culture compose what Don Ihde (1992: 93) calls a 'bricolage of the pluricultural', a multicultural phenomenon.

4.6 Perceiving capabilities

As seen throughout this chapter, designers have interacted with artisan producers in diverse ways:

- By providing consultancies to support the work of traditional and non-traditional handcrafts, such as Renato Imbroisi (Panel 4.2);
- By applying local materials and techniques to design products, such as Bruno Trindade (Figure 3.9), Flavia Amadeu (Panel 3.2) and Yair Neumar (Panel 3.3)
- By reinforcing the sense of locality and cultural heritage, such as Cristiane Dias (Panel 4.1);
- By applying local handcrafts in design products that emphasize the identity, local aesthetics and tradition in contemporary design, such Ronaldo Fraga (Panel 4.3) and Isabell de Hillerin (Panel 4.5);
- By creating new markets through design productions sourced from local communities such as the UK brands Trading for Development, Pachacuti (Panel 4.6) and Here Today Here Tomorrow (Panel 4.4); and
- By supporting social innovation through research, design practice and collaboration in the development of local products, as illustrated through the case of the rubber in this thesis.

Another example of how design contributes to the work of artisan producers is through graphic design, supporting the community's initiatives and products, as exemplified by Andrew Shea (2012). This support assists micro-entrepreneurs through graphic design, design consultancies and business strategies, as demonstrated

throughout the country by the Brazilian institution SEBRAE.²⁶ This type of collaboration can add aesthetic value in both directions – to design products and to local artefacts. The application of local techniques, materials and traditional handcrafts on design products can give distinction to design and also promote local culture, and return financial and symbolic value to the artisan producers. Symbolic value (or symbolic capital) are also created and related to meaning and recognition, and may be economically instrumental and personally motivated’ (Fuller and Tian, 2006: 289). Borges (2011b) summarizes a series of practical contributions that may emerge from collaborations between designers and artisan producers:

Improvement of working conditions; refinement of technical conditions of the products; development of quality control standards; use of the potential of local materials; development of graphic and packaging design for the local products; and reinforcement of the formal references of local cultures.
(Borges, 2011b: 5) [My translation]

This involvement of the designer within the producer community is a complex matter that lays a heavy responsibility, like any intervention, on production – and the community’s routine can have a greater impact than anticipated. Within the complexity of this engagement, Thackara (2005: 215) highlights the importance of the designer reflecting on the consequences of their actions, taking into account the need for sensitivity to the locality and the relationships within it. This deep awareness could guide the ethics of design practices (2005: 7).

This approach to people’s wellbeing and social change through an interaction relating to economic production arouses the need for a holistic understanding of the context,

²⁶ SEBRAE: <http://www.sebrae.com.br/sites/PortalSebrae> Accessed: 23 Sep 2015.

the process in which the designer takes part and the legacy that the interactions generate. However, Thackara (2010) does not offer guidance to help increase the designer's sensitivity to the people, place and culture.

The action-oriented framework of capabilities may help other designers analyse the context and processes involved in their practice for social change and sustainability. The capability approach (Sen, 1999) is applicable to the focus of this study in which the designer interacts with artisan producers and gets involved in their community. The ideal consequences of these interactions would be economic, aesthetic, material (artefacts), socio-cultural, emotional (linked to personal satisfaction) and symbolic (recognition), among others. The question is how to identify and analyse an expansion of the capabilities of both the artisan producers and the designers.

4.6.1 Analysing capabilities

Social innovation for sustainability can be understood as a learning process (Manzini, 2013), as capabilities can be enhanced or developed; and, by increasing capabilities, opportunities for realization can be also augmented (Sen, 1999). The multiplication of social innovation is also important, as demonstrated by the spread of new methods of producing rubber in the rubber-tapping communities in which producers teach each other, but where the support of a network of relations from outside their location (Chapter 7). Mulgan (2012: 39-40) suggests the development of methods and theories that can provide ways of assessing practices of social innovation and social entrepreneurship – that could also serve design practice with communities.

Nonetheless, Sen (1999) does not explain how to identify and assess capabilities. He does not specify a set of capabilities, nor does he enumerate indicators of capabilities and functions; for him, the concept of capabilities is related to what people value and have a reason to value in their specific context (Sen, 1999: 296). While some authors such as Martha Nussbaum (2011) and Frediani (2010) criticize Sen's subjective approach and try to fill this gap, the criteria for the analysis of capabilities remain subjective. Nussbaum (2011), for instance, recommends a list of interpreted capabilities. Her list was used as a guide for the OECD Report²⁷ (2013). This report attempted to quantify the wellbeing of populations by taking into account: income and wealth; employment prospects; housing; health, education; work–life balance; civil engagement; social connections; the quality of the natural environment; and security (2013: 21–23). Importantly, with reference to the capability approach, it subjectively analysed the way people said they felt about their lives and their experiences. Although OECD's parameters, by incorporating Nussbaum's recommendations, were more inclusive than the generic GNP approach, it did not consider cultural differences and contextual circumstances. But consideration of cultural differences and individualities is important for the concept of capabilities and against standardization of wellbeing. In this way, the concept of capabilities according to Sen (1999) relates to freedom of choice and wellbeing. Because it is an open concept, capabilities can be applied to different cultures and situations.

²⁷ The OECD Better Life Index website provides an interactive chart comparing the quality of life in different countries according to different variables. What is interesting is that the user can select the analysis criteria: <http://www.oecdbetterlifeindex.org/> Accessed: 20/12/2013.

Neef (1991) understands that ‘forms of organization, political structures, social practices, subjective conditions, values and norms, spaces, contexts, modes, types of behaviour and attitudes’ are means to satisfy social needs (1991: 24–25), but they can also prevent capabilities and social change from developing (Frediani, 2010). Means and tools that enable the realization of capabilities for the satisfaction of social needs are fundamental. Brazilian architect Alexandre Frediani (2010), who applies the capabilities approach in design and urbanism, argues that the enablement of capabilities²⁸ depends not just on the individual’s choices, but also on a set of tangible and intangible conditions. Examples of tangible conditions are structural and institutional entities such as schools, houses, transport and services. Intangible conditions can be cultural norms, social rules, policies, security, identity, reputation and the respect of others. In his view, physical, cultural and structural aspects of each situation are as important as a community’s participation. He considers that this analysis could inform whether certain capabilities can be developed or enhanced within a particular community context (Frediani, 2010: 177-178).

This analysis reinforces the importance of the local environment, civic structures, values and culture as part of the capability analysis. This perspective is important because it encourages the designer and other stakeholders to think of the medium- and long-term impacts of a project. For example, in the realization of projects involving designer and artisan producers, the lack of materials or difficulties with logistics can prevent capabilities from developing. Therefore the task is to identify specific

²⁸ Sen (1999) defines ‘functioning’ as the outcome of the realisation of capabilities. Nussbaum (2011: 24–25) states that *functioning* does not need to be active; it can be, for example, simply enjoying good health.

challenges related to particular circumstances, and to propose or identify concrete ways to meet those challenges, thus creating strategies for the enablement of capabilities.

Design researcher Alma Clavin (2010: 294) conceptualizes 'capability space' as the set of parameters related to the specifics of a certain context and practice, such as values, norms, actions and feelings. She proposes the consideration of these values as parameters for an analysis of capabilities in relation to wellbeing (Clavin, 2010: 275). This is a sensitive way of recognizing capabilities. Architect Fredianni (2010) is more radical in examining capabilities from the tangible (transport, security, school) and the intangible aspects (e.g.: gender issues, religion, personal relationships) of the context that influence choice and realization. For instance, he looks at the cultural norms, rules and political influences as well as the structural conditions that can prevent a potential capability from being realised.

In order to access and assess capabilities, social researchers have applied qualitative and quantitative methods. While quantitative analysis can provide a general picture of society, qualitative analysis seems to bring in a more sensitive understanding of context, people and particular conditions. In their book *Artisans and Fair Trade*, American social researchers Littrell and Dickson (2010) developed a quantitative and a qualitative analysis of the impacts of a Fair Trade enterprise, Market Place of India, which works with female artisan producers in India. They investigated which skills were needed to improve, generate economic opportunities for and empower the women in this context. Littrell and Dickson (2010) use both methods of analysis to understand whether capabilities and functioning (which refers to the actual realization

of capabilities) occurred amongst the artisan producers. They applied Sen and Nussbaum's theories to their study. By conducting ethnographic research with 161 women, a range of qualitative and quantitative data was assembled and categorized according to material, psychological and social indicators. Psychological indicators included 'freedom from fear, worry, loneliness, and isolation; relaxation from household tensions and an ability to dream', while social aspects comprised 'friendship with other women; decision making for children and community respect' (Littrell and Dickson, 2010: 170). In this way, they were able to extract a series of items providing evidence of capabilities and functioning. Littrell and Dickson articulated how the artisan producers of this fair trade organization transformed their lives, and the lives of their families and communities, through their handcrafts. One of their important conclusions was that the satisfaction of the artisan producers was not necessarily related to the income they received, but to the capabilities that both the economic and the personal return of their work endowed them with, such as providing a better life for their children or being more socially interactive and confident.

Littrell and Dickson (2010) developed an extensive examination of the development of the artisan producers' capabilities. Although they briefly mention the importance of the designer's work in enhancing the aesthetical appeal of the brand (Littrell and Dickson, 2010: 70), they do not explore the designers' interaction with the artisan producers in the social entrepreneurship of Market Place of India. Thus it is impossible to perceive their influence on the development of the individual and the collective capabilities.

4.7 Need for further methodologies

A number of design scholars such as Borges (2012; 2011a), Oosterlaken (2009), Thackara (2005), Ken Friedman (2003), Sylvia Margolin and Victor Margolin (2002) identify the need for further research to improve design practice within the challenges and opportunities of complex social contexts. Dees and Anderson (2006: 39) affirm that the impact of social innovation and social entrepreneurship ventures are difficult to measure. They indicate the necessity of further practice-based theories that can support professionals in this area, such as designers, policy makers, researchers, funders and entrepreneurs (Dees and Anderson, 2006: 39). In relation to social practices, Margolin and Margolin (2002: 24) argue that design education and research have not progressed enough, and also indicate the need for further theories and methodologies. Borges (2012: 155) suggests that ethical and methodological parameters in design need to be developed in order to support social collaborative practices in an articulation of different and distinct contribution. American designer theorist Ken Friedman (2003: 520) recommends further theory-based knowledge in the profession in order to meet the needs of contemporary society. Design manager Tom Russ (2010: 104) questions how designers can assess the impact of social and environmental aspects of their work. These concerns indicate:

- (i) a lack of a specific theories and methodologies able to support design practice and research within the context of the producer community;

- (ii) the need for further comprehension in designers about the processes and the implications of their interaction with local populations that have an effect on issues of wellbeing.

4.7.1 Methods and tools

Collaborative design approaches comprise a number of methods and tools applied to generate synergy between them, motivating creativity through sharing explicit and tacit knowledge. An interaction of designer and artisan producers within community context for social change can be considered as human-centred design (HCD), which Buchanan considers as a means to contribute to human dignity and rights (2001). HCD also emphasizes other stakeholders in the process, which can include producers and their communities (Walters, 2005). A good definition is that human-centred design comprises ‘a creative exploration of human needs, knowledge and experience which aims to extend human capabilities and improve quality of life’ (Walters, 2005 in Zhang and Dong, 2008: 2). IDEO.org (2015) offers the *Field Guide for HCD*, a comprehensive set of tools and approaches to apply during immersion in fieldwork. This guide aims to help designers in their approach to communities, thus identifying the challenges, ideation and implementation of solutions. It is however, project-driven for the development of solutions for social problems, such as clean water, education, and shelter. Sanders and Stappers (2012) propose generative tools for a creative and responsive approach within social contexts in which people are agents of change.

In these approaches there is an abundance of research and tools design to support designers, other professionals and people in their social initiatives. *DIY Toolkit* (NESTA, 2014) and *The Social Design Methods Menu* (Kimbell and Julier, 2012) provide a range of examples: mapping, storytelling, drawing, questioning and connecting networks. The application of these methods serves the purpose of promoting synergy and motivating creativity in workshops, group dynamics and teaching; they also serve to generate research data and encourage people to think out of the box about their problems.

Nevertheless, very little has been discussed about the practicality of designers working within community contexts – not just as researchers, nor as workshop leaders, but in supporting daily practices. Borges (2012: 138) argues that many designers interact with local artisans for a week and leave with beautiful artefacts – but they do not get involved enough to gain a deep understanding of the context or of the implications of their interactions. Many of the participatory methods in design teach and learn dynamics on short courses or workshops; these do not correspond to the professional reality of daily interactions with producers, stakeholders or community members. Thackara (2005) recognizes that approaches to social contexts are highly intuitive, relational, and situational; this subjectivity makes the analysis of the processes and its implications difficult. In his book *Design for Social Change*, Andrew Shea (2012) offers a set of recommendations for designers to incorporate into their social approaches to community; his recommendations are related to the sense of community explored in Chapter 2, reinforcing the need for a designer to adopt a sensitive and responsive attitude to engage in trustful and respectful relationships with community members.

However, although empathy, humility and trust are fundamental to this approach, they are not enough in themselves to promote individual and collective transformations. Shea suggests that a holistic designer approach with communities should operate at various levels, considering thoughts, processes, tools, methodologies, skills, histories, and systems in order to meet the needs of society (2012: 7). Shea presents a series of case studies illustrating this approach, but he does not provide a methodology for reflecting upon the interactions between the designers and the community – and it is such reflection that is the objective of this thesis.

Methods can be useful, but it is important to understand their practicability within the community context. In many situations, the designer is not a workshop leader, but someone who may support local initiatives and production processes by engaging in learning and working within a community's daily practices. In the community context, the designer accords with the local work routines, culture and productive methods of the artisan producers who live there. So the use of these tools is circumstantial, and their application needs to be well thought through, as they can if misplaced or misused create an undesirable sense of hierarchy. Grout (2013) makes the case that design is not a problem-solving activity in which 'fixed' methods need to be followed; he defends the experiential process in which the designer participates in the 'flow of life' within the environment with an approach where designers can be 'most useful' (Grout, 2013: 7). It is this approach that I defend here. It does not mean, though, that design tools are not important or useful, but that their application is related to the need of each particular project.

4.7.2 Teaching and learning

*We need to prepare students to be relevant
because of their point of view, not because of a specific product that they have made
(Williams and Fletcher 2009: 1103)*

The interviewees' responses demonstrated that their collaboration with artisans took place through dialogue and mutual learning during co-creation and exchanging their practice methods. Design methods integrating the designer's practices were a method of approach for these collaborations where work routines on materials and artefacts already existed. Most of the interviewees acted intuitively in their approaches, not rationalizing the process. Condor-Vidal and Williams had been differentiated from the other interviewees by attempting to develop a method in the designer and artisan producer approach. Condor-Vidal had developed a course in partnership with Toni Hicks that has been run at Brighton University. They also have worked with Cherwell College, Oxford, and in partnership with Tuula Salo at Hanover University in Germany. Condor-Vidal's course consists of preparing designers for the encounter with the artisan producers; the students get to know about the local techniques and prepare mood boards that can be used for their conversations with the artisans. During the exchange, the students' first task is to learn from the artisan; then they can begin to discuss ideas and develop a collaboration. A tutor guides this collaboration; the idea is that they result in collections that use local resources, patterns and techniques. This mutual learning approach to collaboration encourages an exchange between the artisans' and designers' expertise. However, it never became clear whether this process was also extended to a reflection beyond collections.



Figure 4.19: Students working on colour trends (Trading for Development, 2014).
 Figure 4.20: Artisans seeing the student's trend research (Trading for Development - Education, 2014).

As with Condor-Vidal's proposition, the Shared Talent project led by Williams stimulated tutored exchanges between students from the London College of Fashion and artisan producers in Johannesburg in 2007 (Figure 4.21), Ghana in 2008 and Delhi in 2009 (Figure 4.21). In these, three programmes were realised with MA students from the Centre for Sustainable Fashion (CSF) at the London College of Fashion (LCF), most of whom have not had any similar experiences. The learning approach for sustainability encouraged collaboration through the artefacts and reflective thinking through which the students should reflect upon the meaning of sustainability in these approaches (Williams and Fletcher, 2009: 1101–1102). The reflective approach in these three projects appears quite organic and in dialogue with the students, with no parameters or further guidelines for their reflection.

From my point of view, these learning experiences are crucially important to the development of future designers. The inclusion of disciplines and MA courses that can give guidance for ethical and ecological approaches to production can enhance the capabilities in the field of design for social change, consequently increasing the

benefits for local artisan producers and their communities. A reflective methodology that provided guidance in this approach could be a valuable tool for the learning approaches above, and others.



Figure 4.21: Johannesburg co-creation workshop with students and makers from UK and South Africa. Shared Talent 1, CSF, 2007. Figure 4.22: Shared Talent India, CSF, 2009.

4.8 Summary

This chapter has investigated the interaction of designers within producer communities in different countries. Evidence has shown that expansion of capabilities as means and ends of social change is a continuous and complex process which is difficult, or even impossible, to verify in the immediacy of short-term projects. However, the similarities of the interviewees' responses reveal that it should be possible to develop further methodologies that can contribute to the designers and artisan producers' joint practices for the processes of social change. Given the complexity of the interaction and the contexts involving projects and communities, the lack of reflection on this process, and the lack of registration in it, may limit the valuable learning which could be shared with, expanded to and transferred between

artisan producers and designers. The following chapter addresses the development of a reflective methodology as a tool to be used by designers and artisan producers in their reflection upon the interactions, the context and the capabilities.

5 Reflective methodology on interaction and capabilities

The thesis proposes that a new way of reflecting on the interactions between designers and artisans within producer communities is necessary. This aims to promote further understanding about the expansion of capabilities – and by extension how issues of wellbeing can be tackled – within the complexity in which the interaction occurs. In the light of capabilities, this chapter proposes a reflective methodology to guide reflection by both designer and artisan producer about the interaction within the context of social change. In this way, it would act as a valuable aid to the potential of projects, both current and future, to foster change. The pillars of this reflective methodology are Activity Theory and the ethos of capability. Activity Theory is explored further in this chapter.

5.1 Introduction

In important transformations of our personal lives and organizational practices, we must learn new forms of activity, which are not yet there. They are literally learned as they are being created.

Yrjö Engeström (2001: 138)

During fieldwork, designers temporally immerse themselves within the community, experiencing a series of events, sharing experiences and collaborating on materials and artefacts. As demonstrated through social innovation and entrepreneurship in the Amazon rainforest described in Chapter 2 as well as by the experiences of several designers in Chapter 3, this is a learning process with potential effects on people's lives. Learning is an important aspect triggered by sharing different practical experiences and knowledge (Engestrom, 2005; 2001; 1999; Verran, 2009). Learning is an implicit aspect of the capability approach of Sen (1999) as by enhancing their capabilities, people become more able to choose and realise what they value; thus learning is paramount in processes of social innovation and social entrepreneurship, which are driven by social change and wellbeing (Fletcher and Grose, 2012; Bunt and

Harris, 2010: 14; Murray *et al.*, 2010: 7, Vezzoli and Manzini, 2008). The examples of the previous chapters demonstrate that while a direct collaboration between a specific designer and certain artisan producers is personal and produces conviviality within the place and through the artefacts, the macro aspect of this interaction is dynamic, and is influenced by multiple factors and an extended network of relations. It was concluded that, however, current design approaches to practice and research within social contexts appear not to embrace this complexity, being short-term and partial. On the other hand, research methods from other subjects appear not to meet the specificities of design and artisan producers' collaboration.

This chapter proposes and develops a methodology for reflection upon this process in an attempt to guide both the designer and the artisan producers through a more holistic comprehension of the context, the interaction and its implications beyond the duration of the interaction. By guiding this process, the aim of the reflective methodology is to encourage a conscious engagement in this learning process in order to help enhance the capabilities of both the artisan producers and the designer. The reflective methodology also aims to serve as a tool for design research and professional practice, helping produce the documentation and analysis of the experience, which is enriched by personal and collaborative reflection. The reflective methodology is a key contribution to this thesis.

5.2 Fundamentals of the reflective methodology

The reflective methodology derives from Activity Theory (AT), with influences from Actor Network Theory (ANT), which provides a contribution to the understanding of complex interactions. In ANT, human and non-human actors alike interact and are agents in complex processes (Coordella, 2006) such as social innovation (Kvan, 2000). The ethos of capabilities (Sen, 1999) permeates throughout the reflection. It promotes an approach to design for sustainability through designer involvement within producer communities with the aim of creating economic opportunities for both the designer and the artisan producer, through respectful collaboration and partnerships. It is understood here that the consequences of this interaction go well beyond the artefacts and the economic outcomes. The objective of the reflective methodology is to bring to light insights about processes that can positively influence wellbeing.

5.2.1 Reflective thinking

I have proposed a reflective methodology as a tool to guide an analysis of the context of interaction, the process and its legacy. Donald Schön (1987) proposes 'reflexive thinking' as a learning process 'in action' during a practical activity, and 'on-action' afterwards. He is of the opinion that reflection throughout a professional activity is a way to generate further learning and a deeper understanding of the patterns of that activity. According to Schön, the constant and fast-paced changes in the professions need adaptability and therefore the learning of new patterns (1987: 15). Activity Theory (AT) also proposes active learning by reflecting during and after an activity. AT

advances reflective thinking by systematizing and analysing an intersection between two or more activity systems [networks of practices] (Engeström, 2005; 2001; 1999).

5.3 Introduction to Activity Theory

AT has its roots in the 1920s and early 1930s Soviet-Russian psychologists Lev Vygotsky, Aleksei Leont'ev and Sergei Rubstein. The theory, also known as Cultural Historical Activity Theory (CHAT), derived from Marx's writings and was influenced by German philosophers such as Kant and Hegel, resulting in a combination of social science and psychology (Daniels and Edwards, 2010: 1; Engeström and Rückriem, 2005: 18 and 59; Leont'ev, 1978). According to Leont'ev (1978), Marx revolutionized the understanding of human cognition by recognizing human perception in practices emerging through the artefacts:

For Marx, activity in its primary and basic form was sensory, practical activity in which people enter into a practical contact with objects of the surrounding world, test their resistance, and act on them, acknowledging their objective properties (Leont'ev, 1978).

Vygotsky proposed a triad of subject, object and artefact (Engeström, 2001). 'The individual could no longer be understood without his or her cultural means; and the society could no longer be understood without the agency of individuals who use and produce artefacts' (Engeström, 2005: 60). According to Engeström, the limitation of this model, however, was the focus on the individual. But Vygotsky's follower, Leont'ev, moved the theory forward by taking into consideration individual actions and collective activities, emphasizing the interrelations between the individual subject and their community; this set comprised an activity system (Engeström, 2005: 59–61).

From the early 1980s, AT was explored further by Western scholars, with Engeström, who (at the time of writing) heads the Centre for Activity and Developmental Work Research at the University of Helsinki, Finland, and who is connected with the Scandinavian development of participatory methods, as one of its main contemporary theorists. Engeström has further developed Leont'ev's approach to AT by looking at the interactions between two or more activity systems. In this approach, Engeström considers the challenge of cultural diversity and dialogue between different traditions, practices and points of view.

5.3.1 Application of AT

The use of AT has expanded to pedagogy, psychology, teaching and learning practices and language cognition. Spinuzzi considers AT a meta-theory of participation which can be employed by diverse disciplines (2005:165). However, apart from its applications in the area of design for Human Computer Interaction (HCI) (Nardi, 1996), AT has been underemployed by design disciplines. HCI applications of AT commonly draw on psychology and social sciences in order to improve the interface between people and computational systems (Kallio, 2010). AT German experts Georg Rückriem and Joachim Lompscher suggest that AT can be a powerful way of tackling societal problems (2005: 7–8), while Engeström claims that it can generate an understanding of the social construction of knowledge (Engeström, 2005: 159). AT's participatory approaches to social contexts range from health care (Engeström, 2001; 1999; Nummijoki and Engeström, 2010; Kallio, 2010) to a variety of educational projects (Virkkunen, Mäkinen, and Lintula, 2010). Engeström proposes the application of AT for the

resolution of complex problems in work environments (Daniels and Edwards, 2010: 1; Spinuzzi, 2005: 165; Engeström, 2005: 159). For example, he analyses a participatory process between patients and staff of a hospital in order to improve health care (Engeström and Rückriem 2005: 18; Engeström, 2001; 1999). Another example refers to the improvement of a home-care programme with the objective of assisting elderly people to retain certain levels of independency and autonomy (Nummijoki and Engeström, 2010). AT, in these examples, addresses the participation of those who carry out workplace functions and those who are affected.

From my point of view, the use of AT in design presents a great potential to promote further understanding of the design disciplinary field in social approaches. It brings a methodological approach to practice and a theory that incorporates complexity as an inherent feature. It can be particularly useful in the approach to design for social change. It analyses a participatory process of interactions between actors in order to pursue a particular goal. The context of this thesis analysis is designer–artisan producer interactions moving towards a goal of enhanced capabilities and improved well-being – as understood in terms of self-esteem, confidence, levels of education, financial rewards, social parity and whatever else people value and choose to be and do.

5.3.2 AT's practical and theoretical approach

Engeström proposes the model shown in Figure 5.1 to illustrate the complexity of the interactions. Each triangle represents an activity system in which interaction promotes new knowledge and patterns of activities (or practices).

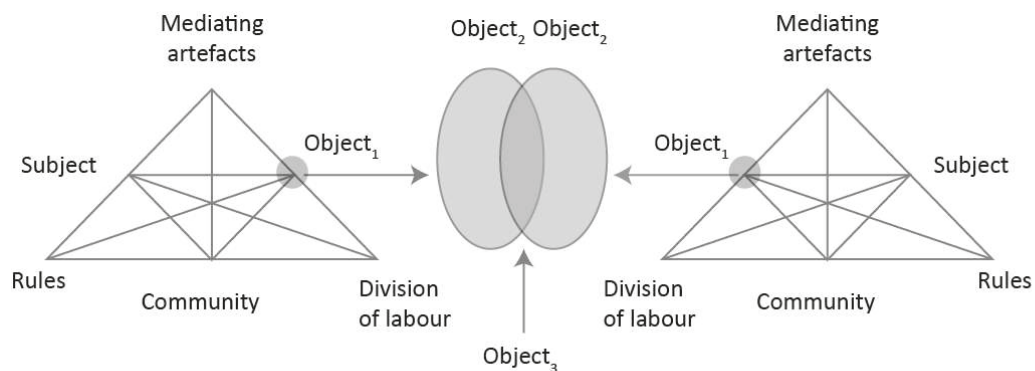


Figure 5.1: 'Two interacting activity systems are the minimal model for the third generation of Activity Theory' (Engeström's model, 2005: 136).

Each activity system corresponds to a structure manifested through individual and collective actions which encompass meaning and purpose (Engeström, 2005; 2001; 1999), key actors and elements, problems and motivations. The visual symmetry between them demonstrates a lack of hierarchy in their importance in this process.

5.3.3 Qualitative transformations and expansive learning

Through collaborative envisioning and collective effort from individuals and groups, the objective of the interactions between activity systems in AT is to promote

transformations in ways of doing things, integrating and adapting new patterns of activity:

An expansive transformation is accomplished when the object and motive of the activity are reconceptualised to embrace a radically wider horizon of possibilities than in the previous mode of the activity (Engeström, 2001: 137).

The learning process that occurs through the pro-active engagement of people in the interactions can provoke transformations in the way they do things – meaning, for example, changes in a productive process, behaviour, methods and strategies, among others (Engeström, 2005: 90). Engeström calls this process expansive learning and qualitative transformations (2005; 2001; 1999). He recognizes and emphasizes the importance of collective intentionality and distributed agency in order to generate qualitative transformations and expansive learning (2001).

5.3.4 The problem with Engeström's approach

Although Engeström suggests that the interaction between activity systems can result in internal and external transformations (Engeström, 1999), which can endure and evolve over time, he does not unfold which kinds of transformations they are nor whether they promote opportunities for people's wellbeing. Neither does he include in his analysis the evolution of the activities after a period of time following the interactions.

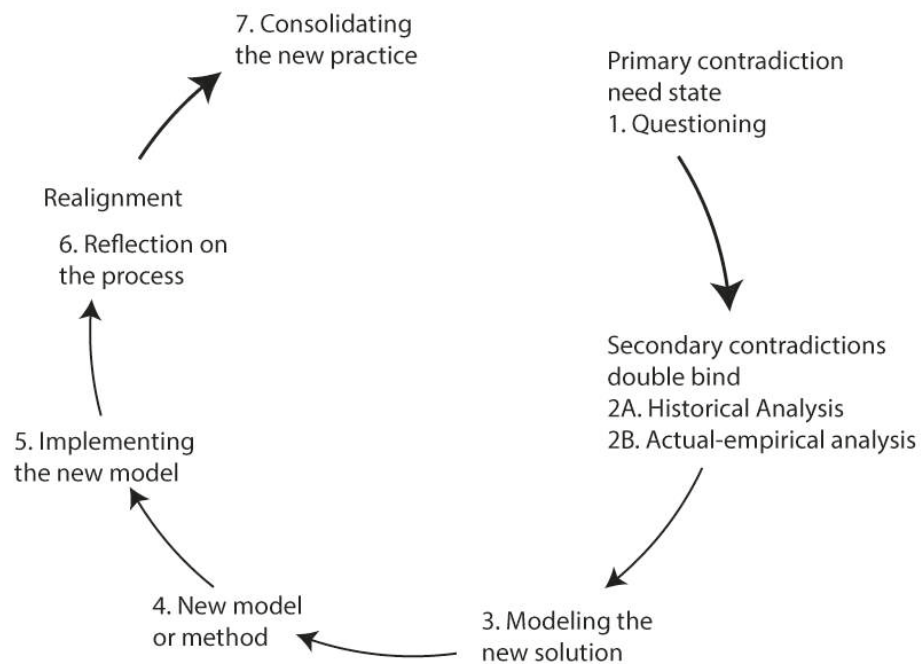


Figure 5.2: Circle of expansive learning (Engeström, 2001, 152).

Figure 5.2 illustrates Engeström's focus on the development of new patterns of activity. This approach, however, seeing transformations occurring from socio-cultural interactions, lacks the human dimension that is integral to this process, whose outcomes and complications can so affect individuals and collectives.

However, from a psychology point of view, Vassily Davydov considers that transformations occurring from the interactions proposed by AT are not just external, but are caused by internal, personal changes (Davydov, 1999: 39). Davydov (1999: 39) clarifies that activities are the ways that: people form and change reality; social laws are manifested; and materials are transformed into products. He adds that 'activity is a

specific form of the societal existence of humans, consisting of purposeful changing of natural and social reality’.

Qualitative transformations, which come about as a result of the effort to achieve change, do not just affect the way people work, but also who they are and how they relate to the world. Therefore, AT can aid the processes of social innovation by promoting learning through reflection upon complex interactions. This can not just promote change in patterns of an activity – a productive activity such as rubber production – but can also, and most important, enhance capabilities, such as expansive learning.

5.4 The construction of a new methodology

Two periods of fieldwork, described in Case Study 1 and Case Study 2, revealed deficiencies in existing methodologies in order to analyse and reflect upon the interaction between designer and producer community within a context of social change – specifically, of social innovation.

My attempts to apply other methodologies and to intuitively develop my own tools did not embrace the complexity that involves (i) the relational character of collaboration; (ii) the importance of the artefacts, and (iii) the extended network of relations that comprises the bigger picture which is determined by power relations, economic tensions and the flow of influences. In retrospect, I also perceived the need for a methodology to help to grasp more subtle aspects of this immersion of the designer in

the situation of the artisan producers. **Table 5.1** below lists some of the strengths and the weakness observed in both AT and in the Capability Approach in this study:

Table 5.1: Strengths and Weakness of AT and the Capability Approach

	Activity Theory	Capability Approach
Strengths	<ul style="list-style-type: none"> • Its system is specifically designed to analyse complex interactions that involve individuals, groups and an extended network of relations; • It places the artefact in the centre of the interactions, as mediator of the process. Thus it suits the interactions between designer and artisan producers, which occur through artefacts. 	<ul style="list-style-type: none"> • It takes into account economic production, which is the primary motivation of an interaction between designer and artisan producers and through which the interaction occurs; • Its analysis extends beyond economic and material aspects, thus aiming to perceive the benefits that a social approach promotes in people's lives; • It relies on the creation of effective opportunities, which relates to people's capacity to promote changes in their lives. This implies learning and personal development; • It perceives that individual changes are likely to be extended to others, thus able to promote social change.
Weaknesses	<ul style="list-style-type: none"> • The systematic approach set by Engeström lacks the human dimension in the approach, such as immaterial aspects of process as those related to the relationships that evolve during the interaction; • The analysis proposed by Engeström is short-term. Although this author mentions that qualitative transformation occurs through cyclical changes over a period of time, there is no subsequent analysis. 	<ul style="list-style-type: none"> • Capabilities are highly situational; • Capabilities are also subjective and immaterial; • Sen does not establish parameters of analysis; • The fluctuating character of capabilities; people's needs and aims change all the time.

With the goal of extending expansive learning proposed by AT – and to foster qualitative transformations that go beyond the activity of economic production, thus

facilitating an enhancement of capabilities of the people involved in the interaction – I suggest a new methodology with the following characteristics:

- It combines AT (Engeström, 2005; 2001, 1999) and the capability approach (Sen, 1999);
- It adapts the reflective and participatory methodology proposed by Engeström to compose new guidelines;
- It includes throughout a more sensitive approach regarding the context and people;
- Capabilities theory is diffused throughout the entire process as a fundamental ethos of the practice;
- It focuses on processes for social change, such as social innovation and social entrepreneurship;
- It focuses the reflection on the specifics of the interaction between the designer and the producer community;
- It maintains the central position of the artefacts as mediators of the interactions;
- It also considers the flow of the process, with its multiple influences and elements;
- The reflective methodology aims to aid an enhancement of capabilities in order to meet individual and social needs, including personal and immaterial aspects of wellbeing.

The use of the reflective methodology aims to increase the perception of:

- The complexity of the interaction between designer and artisan producers as part a process of social change – social innovation, social entrepreneurship or other kinds of collaborations aimed at people's wellbeing;
- The process of collaboration;
- Capabilities in place, how they manifest, develop and are realised;
- Potential capabilities, strategies, actions and attitudes that may influence wellbeing;
- Economic as well as social opportunities, for example: social inclusion and social equality and formation of social capital, among others;
- Immaterial aspect of wellbeing; and
- Transformations during and after the process; among others.

Both AT and capabilities are theoretical and practical approaches to social interactions.

AT's main strength lies in its codification of complex interactions throughout the methodology, and its promotion of conversations, reflection and further understanding of processes involving expansive learning and qualitative transformations – of patterns of activities but also of community contexts. The ethos of capabilities relies on the philosophical and moral background that integrates and permeates the whole reflection. These building blocks of the reflective methodology are analogically intermingled, body and soul, within it. The following section outlines the new methodology and brings in further theories, such as Actor Network Theory, which also corroborates specific parts of the methodology.

5.4.1 Analysing the complexity of the interaction

The reflective methodology is a tool for reflective thinking about designer and artisan producers' interactions within a community context. The aim is to deepen the understanding of processes for social change, such as social innovation and social entrepreneurship, in which designer, artisan producers and other stakeholders, such as other community members, reflect together.

Figure 5.3 represents an interaction between a designer and some artisan producers. These two parties work together on the artefacts. Each part is bigger than its individual elements, embedding a whole network of relations – the lighter-coloured areas representing designer, artisan producers and communities. These sets of actors (human and non-human) correspond to Engeström's activity system (Figure 5.1, Section 5.3.2). These two activity systems connect to each other both directly and indirectly, through the same material, through the practices, people, locality and cause (or values).

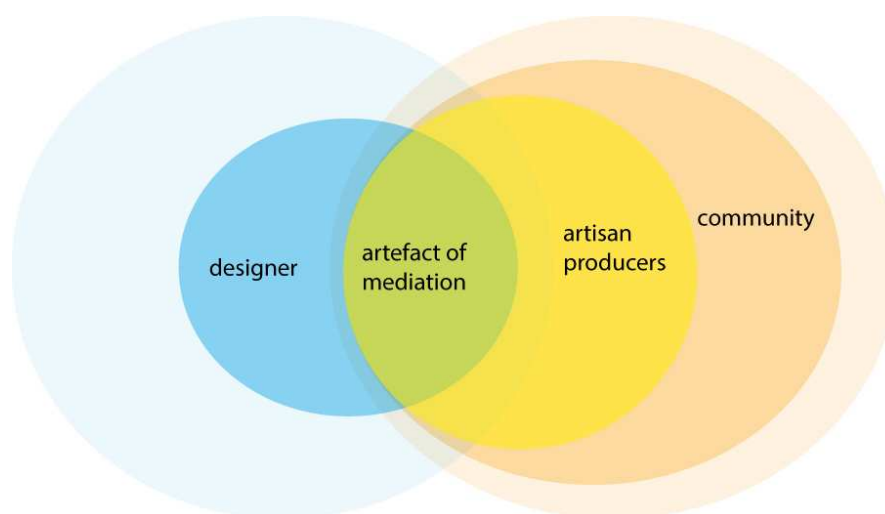


Figure 5.3: Intersection of an interaction between designer and artisan producer.

As observed in the graphic (Figure 5.3), and already discussed (in Chapter 3), the artefacts (materials, tools, processes and objects) occupy a central role in the interactions, from the materiality through which dialogue and collaboration between designer and artisan producers occurs and through which other instances of the networks of relations also come together. By understanding these different layers that are part of the process of interaction, the reflective methodology examines the significance of the artefacts as well as the relationships involved, and looks at both the micro and the macro perspectives of the situation.

The graphic represents a situation in which practitioners with disparate knowledge, different cultural, social and economic backgrounds, and different ways of seeing the world meet to work together. They bring these differences with them, and they also bring to the agendas of the encounter their context and the networks that are linked to them and to the material. For example, in the case of the rubber communities, the designer is never alone; there is a whole network of people and entities that promotes the encounter and enables it to occur; for example, a client, research institution (university), the people who support logistics on the ground and the market for which the material will be produced and so on. Beside the artisan producers, there is the whole community, which includes their families, friends, cooperative, leaders, as well as their network extended to other communities and entities outside the location (government, schools, industry, intermediaries, among others). These networks interlace and share commonalities in which the material is a connection through which dialogue, collaboration and mutual learning unfolds.

5.4.2 Key elements and motivations of the interaction

In order to begin discussion and reflection, the contextualization of the interaction is a first step towards the understanding of the context in which the interaction occurs, thus the key components and motivations that delineate the scenario. This includes the main actors (human and non-human/institutions, sectors, companies), and their motivations to collaborate, their objectives, and the artefacts. Some basic questions can instigate the description and initial reflection on the context, process and/or interaction of analysis:

Who are the participants? What are their main activities? Where do they live and produce? What is their relation to the locality where the collaboration and the productive practice occurs? What are the reasons behind their motivation to collaborate with the designer? (Why do they collaborate/interact?) What are the objectives of the collaboration? What are the key action points of the collaboration?

These questions aim to create a context for the collaborations and their main objectives, and are useful for the designer in the preparation of fieldwork. This phase comprises the first dialogues with community. Moreover, becoming more familiar with the context, the people, the local challenges and the cultural differences in advance is a fundamental and somewhat obvious step to be taken in order to prepare the designer for engaging and collaborating better. To increase their understanding of location, people, aims and expectations, the first conversation with the community must be about their work and what will be done. This forms a basis for the reflection

that will follow, and, in a relational way, it is concerned with the first contact with between designer and artisan producers, when empathy and trust begin to develop. The documentation of the context is descriptive and can be illustrated with photos, maps and schemes.

5.5 Six perspectives for reflection

The contextualization bases the reflection upon *six perspectives on the interaction and the capabilities*. The six perspectives of the reflection form the main part of the methodology. It provides six different angles from which to look at different facets of the same situation.

The six perspectives for reflection on interaction and capabilities listed in Table 5.5.2 guide a holistic reflection upon the complexity of interactions between designer and artisan producer, aiming to contribute to an expansion of local capabilities and thereby, social change. The first five perspectives derive from the principles of Activity Theory proposed by Engeström (2001: 133–139); the adaptation had the objective of bringing a more sensitive character to the reflection in order to better connect to the ethos of capabilities. The sixth perspective looks at the enhancement of capabilities over a period of time following the interaction.

Table 5.2: Comparative table between Activity Theory and Reflective Methodology

	Five principles of Activity Theory	Six perspectives for reflection on interaction and capabilities
1	Network	Constellation
2	Multivoicedness	Diversity and Conviviality
3	Historicity	Narratives
4	Conflicts or tensions	Turning Points
5	Expansive Learning or Qualitative Transformations	Technological and Creative integration
6		Resilience and Legacy

Each perspective is described in a sub-section below. Capabilities are an intrinsic part of the reflection; it is a principal objective and the intention to perceive where and how capabilities exist and emerge. It is also important to remember the three points made by Sen (1999) and explored in Chapter 3, which relate to the productive process, which is an important aspect that motivates the interactions; the direct influence of capabilities on wellbeing and freedom, which is linked to what people value, feel and want to the change or engage with through their choices; and their indirect influence on social change, which is also related to extending capabilities from certain individuals to others in society.

5.5.1 Constellation

Constellation examines the network of relations that are part of the process or project.

Understanding the complexity of the network requires awareness about multiple influences spread amongst people and institutions, both from within the community and from outside it. It also concerns the role of the designer in the network.

Engeström recommends that individual and collective actions should be interpreted against the whole activity system, which is artefact-mediated and object-oriented

(Engeström, 2005: 90). Mapping and representation of the key connections which link

the actors (human and non-human entities) and the elements of the interaction, facilitate visualization and reflection (exemplified in Chapters 6 and 7).

Designer and artisan producer interaction occurs through coalitions that come together as part of social innovation and social entrepreneurship. In this way they liaise with an array of human and non-human actors and elements, 'discursive and non-discursive elements', such as producer cooperatives, institutions, designers, markets, research, philanthropy, philosophical and moral mindsets, which come together to deal with complex societal matters (Foucault to Gordon, 1980: 195). 'This approach is strategic by nature – a matter of a certain manipulation of relation of forces, either developing them in a particular direction, [or] blocking them, stabilising them, utilising them' (Foucault and Gordon, 1980: 194–228). Thus the constellation is about power relations in this network and the flows within it.

Of the different network theories, Actor Network Theory (ANT) brings the idea that both human and technical non-human actors constitute dynamics of a network of relationships and affect each other (Cordella and Shaikh, 2006; Latour, 2005; Law and Hassad 1999; Latour, 2004). ANT is a useful way to think more holistically about complex systems, as the interconnections among human and non-human actors can serve to articulate how different dimensions interact and affect each other (e.g. economic, social, cultural, environmental, and political, among others). According to Cordella and Shaikh (2006), ANT focuses on the dynamics of interactions between technological artefacts and people, considering how both participate in and shape outcomes (Latour 1987 in Cordella and Shaikh, 2006: 3–10). The constellation that

comprises the network of relations emphasizes the constant negotiation between technology and society, in turn emphasizing the heterogeneous character of their relational nature (Law, 1999 in Cordella and Shaikh, 2006: 9–14). ANT provides insights about the flows and links among numerous actors and elements, a chaos which AT tries to help organize and understand. The visual representation of the network of relations can help the apprehension of the flow of communication between the key actors and to identify primary actors, positioning the designer and participants in relation to this network. A question relating to this reflection is whether capabilities are manifested through the network and, if so, how.

5.5.2 Diversity and Conviviality

Diversity and conviviality are connected to the sense of community, to the invisible and subtle aspects that enable collaboration. Empathy, humility and trust are aspects that are important to the enabling of collaborative synergy. This is related to a sensitive and respectful approach, one that takes the artisan producers' motivations and needs into account. As an outsider, the designer needs to respect the rules and conventions that shape the community. In a collaborative process, the participants are encouraged to not only share practice and knowledge, but also commit themselves to the project.

This perspective is about conviviality during interactions. It looks at how the synergy between the designer, the artisan producers and other stakeholders develops. It can also discuss issues of difference. Engeström calls this item *multi-voicedness*, through

which he refers to the diversity of personalities and collective perspectives brought together in the interaction. Diversity is multiplied in the new network that is formed from the interacting activity systems. It comprises the different stories arising from the artefacts, the cultural norms and the policies. This dynamic requires translation and negotiation (Engeström 2001: 136). This perspective asks how capabilities manifest themselves in this engagement.

5.5.3 Narratives

The narratives draw attention to the voices that emerge during the collaborative process, telling the stories of the location in which the process of social innovation is taking place, which includes the collaboration with the designer. Engeström calls this perspective *Historicity*, which alludes to the history of an activity system and its objects. It is also concerned with the history of the interaction (Engeström, 2001: 137). The perspective of narratives encompasses listening to the people of the community and understanding how the materials and artefacts are related to their history, identity and capabilities. Narratives come to life through oral history, conversations, audio-visual documentation, drawings and collaborations; fieldwork notes and field diaries are important ways to register, tell and develop narratives. Cultural probes, too, can be useful here to inform the ways in which participants comprehend the collaborative experience (Gaver *et al.*, 1999). They can also reveal how new methods and ideas are being integrated into the existing work patterns of the community. Listening to the artisan producers and to the other people in the community is imperative in order to make sense of the challenges, problems and potentials within the producer

community; material and immaterial aspects related to issues of wellbeing can also be revealed.

5.5.4 Turning Points

Turning points endeavour to perceive moments of transformation. This perspective draws on the insights and realisations arising from the outcomes of dialogue and shared practice through the materials and artefacts. Transformations can occur gradually, either during the interaction between designer and artisan producers or as a consequence of it. Thus, turning points are not easy to identify. The concept of turning points does not attempt to perceive long-term transformations, but key moments of discovery that comes to light through conversations and actions that express creativity, synergy or the emergence of new knowledge.

At this junction, I deviate from Engeström's principle of 'contradictions and tensions', by examining the emergence of mutual learning and creativity, whereas his suggestion is to observe the tensions and contradictions. The turning points however can emerge from tensions already existent in the context of interaction and also emerging from it. Contradictions and tensions come to life however at any of the perspectives in which they are perceived. According to Engeström, *contradictions* are historical accumulated tensions. They are problems and issues that motivate efforts for change. The insertion of new elements can affect old problems and established activities, generating new opportunities and also new challenges. The turning points can come out of

contradictions, thus they are intense moments of the interaction and of transformation.

5.5.5 Technological and Creative Integration

Technological or creative integration are transformations that occur when innovation is adopted, integrated into people's routines and adapted to serve local needs. It is closely related to the realization of capabilities.

The fifth perspective of the reflective methodology observes the integration of new methods, strategies and patterns of activities into the local routine. It is related to changes in the activity patterns in which people gain new expertise, and is closely related to the social innovation processes in which technological and creative changes drive individual and collective transformations. In parallel with AT, expansive learning, or 'qualitative transformation', would correlate to the fifth principle (Section 5.3.3); they are the supposed outcomes of the interactions. The transformations that occur through the productive activity are the means and ends of capabilities and social change.

5.5.6 Resilience and Legacy

Social innovation and social entrepreneurship are long-term processes which also evolve and adapt. Resilience and legacy prompt reflection upon the medium-term and long-term impacts of the collaboration between the designer and the artisan producers. It ascertains whether there is any continuity of the learnt processes once

the designer has left or a project has ended. Behar (2011) considers that the result of long-term partnerships between designers, clients, producers and consumers can leave a legacy. According to Chick and Micklethwaite (2011: 39), 'the thinking, ideas and practices that reside in, remain and continue being used by the individuals who participated in the projects' can be considered as a legacy.

The resilience of the process of interaction lies in the continuation and reverberation of the activities developed during the collaboration between the designer and the artisan producers over time. It looks at whether there was a contribution to the local wellbeing after immediate outcomes of the interactions. It reassesses the collaborative process to examine the continuation and evolution of social innovation and learning.

Resilience is a property of rubber that is related to the plasticity of the material in absorbing an impact, distorting and returning to its initial state; however some change may have occurred. In relation to nature and human behaviour, resilience is related to the capacity of regeneration, of recovering quickly from difficulties. Here, this perspective relates to the impact that the collaboration with the designer and any other stakeholders has on the artisan producers and their communities. For instance, in order to analyse the short-term (about one year), medium-term (from two to five years) and long-term (from five to ten years) outcomes and influences of the activities in the local context, it is necessary to reassess the methods and activity patterns developed through continued contact with the artisan producers.

If direct, face-to-face, contact with the artisan producers is not possible, this reassessment can be carried out by some sort of remote contact. The reassessment is important because it gives a hint of the influences, the challenges and the relevance of the processes. For Manzini and Till (2015), the resilience of a social innovation refers to new ways that a society finds to react against challenges by using creativity, drawing from cultural diversity and connecting the local and the global. 'Resilience is quite a disruptive concept: one that calls for radical transformations' (Manzini and Till, 2015:10). For Manzini, learning from experience and collaboration is strategic in order to generate more sustainable scenarios.²⁹ The legacy of the collaboration can in fact become more important than the final products; the interplay between designers and artisan producers is temporary – but the legacy of the collaboration may have a long-term impact on people's lives.

Although Engeström points out that '[t]he object of activity is a moving target, which is not reducible to conscious short-term goals' (2005: 63), he does not reassess the influence of the interactions after a period of time in order to perceive whether there was any resilience in this process. In the adaptation of Engeström's AT, I include a sixth item: 'Resilience and Legacy'. This addresses transformations and challenges of the context approached some time after the interactions. The perspective of Resilience and Legacy looks at individual and collective transformations over a period of time. Through this perspective, designer and artisan producers are invited to reconnect and reassess the collaboration in order to perceive: whether individual and collective

²⁹ Cultures of Resilience: <http://www.culturesofresilience.org> Accessed: 25 Feb 2016.

capabilities were enhanced; what did not happen; and whether this promotes new actions and capabilities.

5.6 Empirical application of the reflective methodology

Figure 5.4 summarizes the structure of the reflective methodology. The perspectives for reflective methodology are to be applied gradually and collaboratively by designer and artisan producers. The perspectives are also to be applied in a reassessment of the process. This process is to be led by the designer during immersion within a community context, and he/she should make notes to register and further reflections. Bassot (2013: 90) suggests that reflective thinking can be developed collaboratively as reflective conversations. Stringer and Beadle (2012: 163) argue that the process of hearing the voice of the people, enabling them to reflect on both their own situation and the issues in place, supports a proactive attitude towards the realization of their aims. By encouraging reflection upon the processes and capabilities, the reflective methodology aims to contribute to further capabilities – for both the artisan producers and the designer.

My intention is not to compile yet another tool to group dynamics, but rather to promote a thoughtful practice that evolves from conversations and promote reflection during and after the immersion within a producer community context. Given that some communities being situated in disadvantaged areas many of their artisan producers are illiterate, I suggest a more dialogical approach for the reflection. It can be used during collaboration (with the designer taking notes for later validation and

remembering) or it can be made part of a routine to dialogue and discuss the activities of the day. This would comprise a metadesign approach, which aims to be an open, unpredictable and emergent process evolving through dialogue and collaboration (*The Journal of Co-design*, 2010; Pangaro, 2010; Parsons, 2009; Wood, 2007; Giacardi, 2006; 2005). Designers can also make use of existing design approaches to collaboration, where they appraise useful insights. For instance, tools of design thinking can serve as stimulus for reflecting through the lenses of the reflective methodology.

The reflective methodology is meant to be applied throughout the whole process of fieldwork and beyond, helping, too, with the preparation and further examination required after the fieldwork. Thus it is a tool that serves research, and a professional practice that aims to foster further expertise regarding design for social change.

Figure 5.4: Structure of the reflective methodology

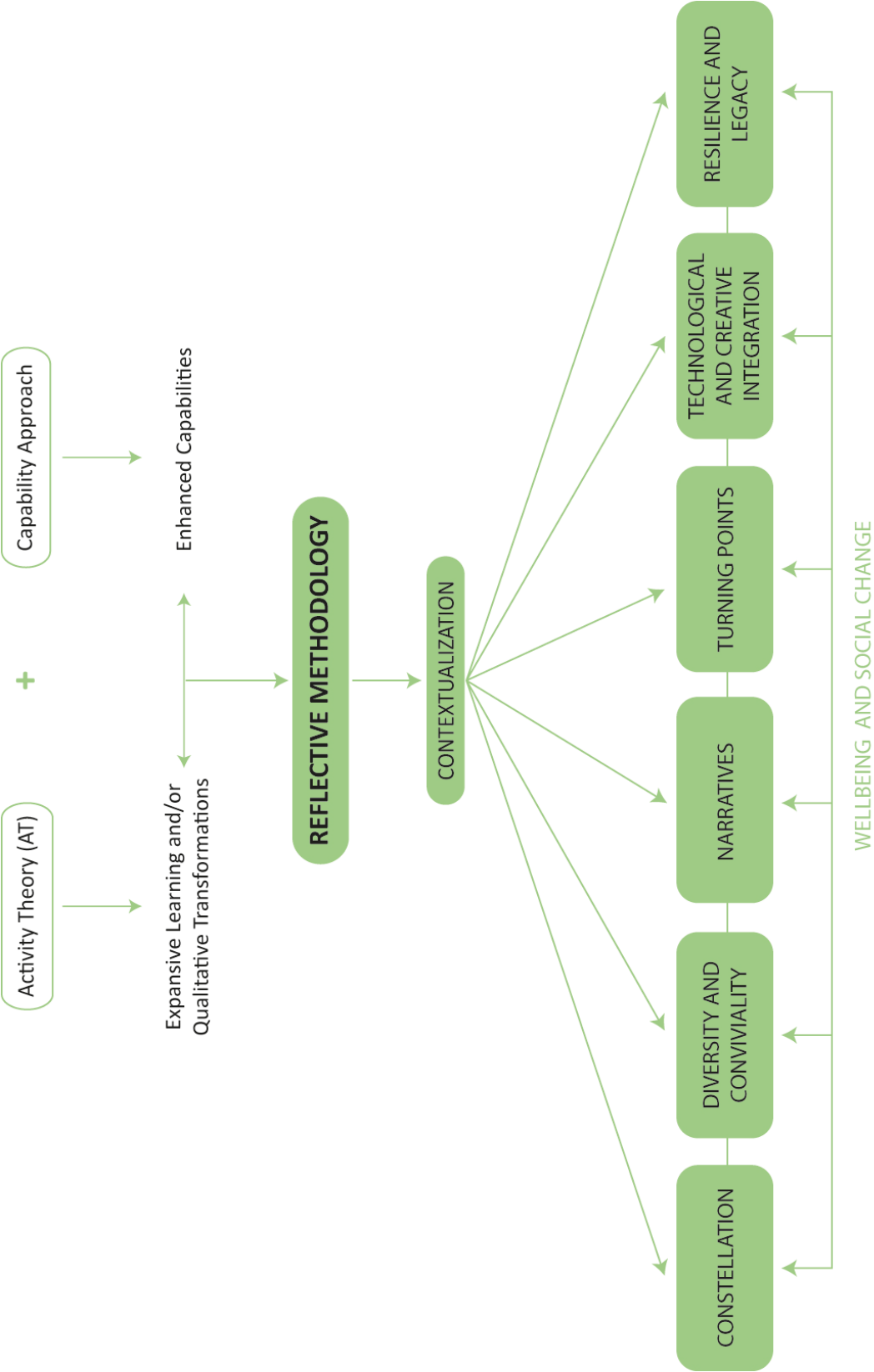


Table 5.2 lists some methods that can be intermingled with the main methodology.

Overall, I recommend a sensitive approach of the designer regarding the application of methods and tools, prioritizing participation in the community routines and learning through dialoguing and collaborating on the artefacts and other local activities.

Table 5.3: Six Perspectives for Reflection

Perspective	Definition	Content, Methods and Materials
Constellation (the network of relations)	Making sense of the context and interconnection between different actors and elements.	Mapping and connecting. Looking at the synergies between people, institutions, places and elements that compose the interaction.
Diversity and Conviviality	Understanding the multiple voices and 'hands', which interact through the artefacts. The synergy between the people that emerges from dialogue and creativity.	Diverse backgrounds and interests. Individual and collective intentionality. Exchanges between practices across differences and similarities.
Narratives	Listening to people and recording the experience. Informs about locality, identity and meaning of the practices; promotes understanding about individual and collective situations. Reveals people's involvement with the collaborative process; the relationship with the designer; and the challenges and perspectives related to their productive activity.	Oral history, story telling, genealogy of the local practices. Expressions, gestures and language. Cultural probes, interviews, conversations, field diaries, audio-visual materials.
Turning Points	Moments in which shifts and transformations are expressed in key ways, through making, dialogue, expressions and behaviours.	Insights, moments of change, or of the identification of a problem. Questioning, looking through a different angle; emerging issues. Discovering a new method. Important conversations that expresses internal (personal) and external changes.
Technological Integration and Creative integration	When a new technique, strategy, or learning acquires meaning. Adopting, adapting, transforming and integrating with local activities and culture.	Description, audio-visual materials, personal declarations expressed in conversations and interviews.
Resilience and Legacy	The influences and continuation of a new technology, process, and strategy. How the activity unfolded other aspects (e.g.: socio-economic). Enhanced capabilities.	Requires continued relationship. Short-term – it is possible to know what was learnt and initial difficulties. Medium-term – it is possible to observe what was integrated, transformed; and some consequences of the interaction, in individual and collective level. Long-term – continuation of new practices.

5.6.1 Metadesign approach

Italian designer Elisa Giaccardi suggests that metadesign should deal with the creation of context rather than content (2006; 2005) meaning that people collaborate to promote changes in ways of doing or thinking. Black (2008: 44) completes the definition of metadesign by considering it ‘a holistic approach looking at the entire context in which the designer and the intended design operates’. A metadesign approach is conceptually one to be put forward by the designer working with a producer community; designer and community members and stakeholders come together to develop the strategies, products and actions that can promote social and economic changes in that specific context. Nonetheless, the too-open character of metadesign does not give guidance to a holistic approach within specific situations. Thus, what I propose here is a metadesign approach, which is dialogical and collaborative, in which designer and artisan producers should reflect on the particularities of the context and the interaction aiming at social change and wellbeing.

5.6.2 Reflecting through writing

Fundamental to the proposed methodology is the writing process by the designer. Their written reflection of the experiences becomes part of the thinking process that is an awareness of being in that location and being responsive to the place and people. Bringing the collaborative practice to a process of writing up, organizing visual material and reflection upon processes is part of the learning process proposed by the reflective methodology. It aims to aid designer’s capabilities and contribute to the

design field. It also aims to document the process and bring the voices of the artisan producers and of other people within the process.

Barbara Bassot (2013: 14–16) recommends that reflective thinking should be written in the first person to allow deeper levels of reflection and clarity upon the experiences. This is a daily practice routine recommended for the designer and research professional during fieldwork. A field diary promotes subjective, personal and open narratives upon the process. It could be divided into two parts: one for the perspectives and the other for free writing. By adding the perspectives of analysis, deeper insights can emerge. Bassot (2013) and Schön (1987) suggest that through writing the reflection about the experience, the learning process is intensified. The same idea is proposed by Carter (2004), who considers that writing about the collaborative process between different practitioners is a form of thinking. Table 5.5.4 provides some recommendations for the use of the reflective methodology. The set of perspectives gives guidance for dialogue and reflection to discuss the different aspects of economic production, culture, community and personal aims which relate to people's wellbeing.

Table 5.4: Application of the reflective methodology

When	By whom	Function	Objective
During the interaction	Designer and artisan producers	Reflection during practice – reflective tool.	Mutual learning through the process. Perceive capabilities and potential capabilities.
After (months and years if possible)	Designer and artisan producers	Reassessment of the process. Reconnecting with community. Reflect again about the process and future prospects.	To perceive whether there was a legacy from the interactions. To reflect retrospectively about the process. To perceive whether further capabilities evolved since the activity occurred.
During and after the interaction	Designer	As a tool for design research and practice through reflective thinking.	To reflect through writing To register the process of interaction and collaborative reflection. To review and reflect upon design roles.

This methodological application also aspires to facilitate the documentation, comprehension and articulation of outcomes and impacts of the projects developed by the designer, artisan producers, other community members and stakeholders.

Brazilian anthropologist Antonio Arantes (in Borges, 2012: 139) recognizes the importance of documenting the interactions between designers and artisan producers, as these encounters can provoke transformations in cultural practice.

5.6.3 Phenomenological perspective

Such thought may tell something of value about physical objects, but it is incapable of coping with that attribute which is most distinctively human: subjectivity (Tiley, 2004:2).

Phenomenology opposes a view of a disembodied, detached perspective of the experience and perception. It emphasizes the relevance of the experience from the

bodily point of view as a way to conceptualize the complexity of lived experiences, of place and events in the past and present (Tilley, 2004; Casey, 1997; Merleau-Ponty, 1962). The reflective methodology encourages designers to reveal the process and perceptions of the place, interactions and events through writing. This practice of reflective thinking, through research and professional practice, implies a point of view which is introduced by the designer's voice. This embodied point of view is attached to the subject who attempts to describe the experiences in the world, which process may lead to 'fresh insights and new knowledge' (Tilley, 2004: 1). Phenomenology 'offers an account of space, time and the world... we "live" in' Merleau-Ponty (1962: vii). 'It is momentous in its consequences' (Casey, 1997:239) in the place where the observer, researcher, participant – and, here, the artisan producers and the designer – become part of.

The consideration of the phenomenological perspective implied in the designers' narratives provide an intrinsic incompleteness to the application of the reflective methodology. While it accounts for the existence of other voices, perspectives and knowledge, this approach is more about understanding the interdependencies of humans and the natural world, and the role of experience in ways of knowing.

5.7 Applying the reflective methodology

The reflective methodology is applied in Chapters 6 and 7, bringing to the fore my experience in fieldwork with two rubber-tapping communities in the Amazon

rainforest. Collaborations took place in the core of the communities and through the artefacts. The significance of this tightly focused approach which motivated our encounter was, however, encapsulated within a larger process of social change. This perception confirmed the lack of a design methodology that could guide reflection upon the designer and artisan producer's interaction within the complexity of social change. An analysis of methodologies and tools shown that they are mostly short-term and not holistic in their analysis of the context; Engeström's approach to Activity Theory was demonstrated to be useful to the understanding of complex social interactions occurring from the materiality of the artefacts; however, his assumed procedural and artefact-oriented approach (Engeström, 2005, 367) lacks human dimension concerning people's wellbeing and other immaterial aspects. The notion of capabilities proposed by Sen (1999) relates economic production, material and immaterial aspects of wellbeing and social change, which can then substantiate the collaboration which occurs through productive activity. This provided me with the insight that existing approaches were falling short of capturing context, timeframe, interactions, designer's roles, materiality of the artefacts and sprawling networks of relationships. Therefore, the new methodology that I propose is in response to this gap.

The reflective methodology was created in order to lead the reflection as a theoretical outcome promoted by the lived experience. Therefore, the application of the reflective methodology occurred as a post-rationalization of the field works. By being analysed in the light of the reflective methodology, the case studies in turn, informed its application and design, corroborating the methodological development. I have drawn

evidence from materials collected during the fieldwork, such as field diaries, audio-visual recordings, and subsequent interviews and conversations by telephone and Skype with artisan producers and other stakeholders.

5.8 Summary

This chapter contributes to knowledge twofold: (i) by identifying that existing ways of structuring, supporting and reflecting on designer–artisan interactions are partial and insufficient; (ii) by developing a new extended methodology. The reflective methodology gives guidance to analysis and reflection before (in preparation), during and after the practice. It touches on different points of the process, such as the network of relations, which is a macro view over the process, as against the micro, close-up view of the relationships in the conviviality and collaboration during the immersion of the designer within community context. The combination of AT and capabilities brings in its wake a reflection on the procedural aspect of collaboration which occurs through the materiality of the artefacts, with the perception of capabilities as a means and end of the encounter between designer and artisan producers. Capabilities theory provides a perspective that sees beyond doing and learning, in an attempt to perceive what this process opens up in terms of opportunities and enjoyment of life.

The reflective methodology then attempts to reveal the purpose and meaning of the interaction and to deepen the understanding of social change, by extending the examination to the network of relations and through the transformations that evolve

through time. By applying the reflective methodology, the objective is to generate active learning by reflecting upon the practice while it happens. As a result it is expected that capabilities are identified and insights that can promote actions and attitudes leading to an enhancement of capabilities can evolve amongst artisan producers, designer and others.

The following chapters, Chapter 6 and 7, further develop this reflective methodology by applying it to Case Studies 1 and 2. Through them, it was possible to test and improve the methodology. The cases studies serve to demonstrate a use of the reflective methodology in a practice within a producer community.

6 Reflective methodology applied to design research

This chapter connects theory and practice in the construction of the reflective methodology; but also, the reflective methodology guides the systematization of the evidence produced in field research for a better understand of the complexity of the process for social change and sustainability within this local context. It is a post-rationalization of the field research realised in 2011, engaging with the productive process of rubber and rubber artefacts in the Amazon rainforest. The reflective methodology (described in Chapter 5) then becomes valuable to design research through making sense of the roles of the designer and the implications of the collaborative process.

6.1 Introduction

In December 2011, I travelled to the Amazon rainforest to experience the sourcing of natural rubber and the making of rubber artefacts. Previously I had researched the method of producing coloured rubber in the LATEQ chemistry laboratory at the University of Brasilia (UnB) and from 2004 had developed numerous design projects using coloured rubber. The primary objective of my field research was to learn the day-to-day reality of the rubber tappers who had embraced new methods of rubber production in an attempt to find new markets and sustain the economic viability of the local activity based on rubber production (see Chapter 2). Within this process of social change for sustainability, I was interested in perceiving whether collaboration with designers could contribute to the nurturing of personal and collective action towards local objectives.

This chapter reviews Case Study 1. It considers my experience with artisan producers in a village in the rainforest, whose main economic resource is rubber. The production of rubber artefacts by some community members is a recent activity, originating from

their adoption of the methods of producing rubber sheets (FDL and FSA, as explained in Chapter 2). For a week, I worked with the artisan producer José de Araújo, whose main product is rubber shoes, but also with other rubber tappers and artisans. Throughout this chapter I reflect on this context and experience (Case Study 1) through the application of the reflective methodology.

6.2 Fieldwork setting

Among the communities of the rainforest, the village of Assis Brasil³⁰ in the state of Acre stood out as a place suitable for collaboration for its location – easy access – for its outstanding organization, and especially for its emergent handcrafts using FSA (Chapters 2 and 3). The main artisan producer in this community was the rubber tapper José de Araújo. His work, and that of other community members, constituted fine examples of technological and creative integration of the new technology. In this setting, new production methods, materials and artefacts were transforming the social order by now including women in the work of rubber processing.

6.2.1 Researcher's engagement in field research

I engaged with the rubber-tapping community of Assis Brasil via two interlinked roles: the first as a researcher participant and observer, the second as a design collaborator. These two functions came together in the role of reflective practitioner. Using reflective methodology described in Chapter 5, I have reported in this chapter on my experience in the rainforest and the continued partnership that developed from that.

³⁰ The name of the village is Assis Brasil (as against Assis, another municipality in Brazil); the two words are written together and the word Brasil spelled with 's', as in Portuguese.

It also shows how social innovation can adapt and transform, bringing new challenges and opportunities.

Evidence was gathered from my field diaries and interviews, plus some audiovisual materials added from previous analysis made during this research. I interviewed the two main artisans: José de Araújo and Nazareth. I also interviewed two community leaders, who together provided me with a deeper understanding of the municipality's social, environmental and political context. Other community members contributed to this research through open conversations and questioning. Interviews and conversations were carried out in Portuguese; they were audio-recorded with the spoken consent of the participants; the main interviews, as specified above, were later transcribed and summarized. One more interview with José de Araújo was run in 2014 in order to reassess the experience and data gathered in 2011 as well as to discover whether there were further transformations in his work and in the community's context (Section 6.2.5). The data gathered through the interviews has contributed to this chapter in two ways: by providing knowledge of the current socio-cultural configuration of this producer community; and by providing data for the analysis led by the reflective methodology. Field diaries were especially important here, as they captured my personal reflections written daily during my time in the community.

6.2.2 Field research aims

The key focus of the field research was to understand whether collaboration between designer and artisan producers could contribute to the ongoing process of social

innovation. The rationale for this immersive approach was to further comprehend the situation of the rubber tappers within the changing scenario of social innovation (Chapter 2). In my application of the reflective methodology to Case Study 1 in this chapter, I tested the methodology and actually improved it. The reflections made through this process are outlined in this chapter.

6.2.3 Post-rationalization of reflective research

The research process of preparation, participation, evidence gathering and reflection in this field research led me to identify the need for further methodology that could better support design research and practice within the complexity of producer community in transformation. In this context, the productive process is interconnected in the web of cultural values, identity, natural environment, social structure, sense of community, family ties, skills and knowledge. Designer and artisan producers interact through the materiality of the artefacts, a materiality about which they share an interest and tacit knowledge. The materials and local artefacts were however produced for a non-local market, implying an interdependence between the local and the non-local. These ideas have already been explored in previous chapters, but through the reflective methodology I attempt to further comprehend these implications.

This is the gap that the reflective methodology tries to cover with the aim of improving design approaches and contributing to an expansion of design and artisan producers' capabilities. The methodology is applied to the content of this reflective and

collaborative research with the intention of capturing the insights, nuances and consequences of this approach.

By bringing in the content of the research and reflection, it was also possible to test the new methodology as a tool to guide design research specifically in a local small-scale producer community. The re-examination of Case Study 1 promoted further insights into the process of collaboration within interdependences and wellbeing in the rainforest.

6.2.4 Question for the field research

The question for the field research was whether design and technological – that is, new tools – inputs into the aesthetics, quality and scale of the local artefacts could add any forms of value – material, immaterial or both – to the artisan producers’ work (Figure 6.1). Could any such added value help, for example improve working conditions, generate higher income or encourage personal achievements, therefore amplifying sustainability?

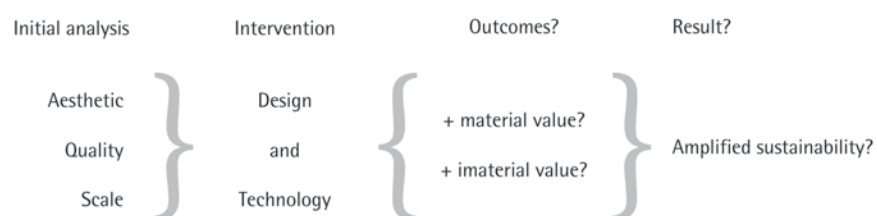


Figure 6.1: Field research question, 2011.

These were the questions I asked in 2011. Social innovation incorporates the technological aspect – the new tools and methods – as means to amplify sustainability. As the research progressed, the essence of the questions remained the same (Chapter 1, Section 1.3 Research questions⁶). The idea of amplified sustainability was then translated into the ethos of capabilities, which relates material and immaterial conditions to means and ends of social change (Chapter 2). In the case of the rubber-tapping communities, the rubber is an essential vehicle for fostering capabilities. This places the materiality of the artefacts not just as the final result of the interactions, but as a pivotal medium for the creation and enhancement of material and immaterial values.

The initial objective of the interaction was to perceive how the creative process with the coloured rubber emerged after the adoption of the new material. At first, my aim was to shadow the production of the material itself and then the handcrafting in order to identify the challenges and opportunities of the activity. My second objective was to perceive whether designers could make any contribution in this context, and if so how. Although there were inferences originating from the previous investigation, only direct experience within the current context could answer these questions.

6.2.5 Preparation for field research

The fieldwork was preceded by a historical and cultural study of the rubber-tapping communities in the Amazon rainforest, which is related to Brazilian economic, political and environmental history; in Chapter 4 is a historic and socio-cultural overview. That

study was complemented by conversations about the actual context of this community with Pastore, my research advisor. This knowledge gave me the background needed for me to engage in conversations and questioning during my time in the community.

Chapter 3 introduced the creative integration of FSA by José de Araújo. By exploring the potential of this material, he reinvented the method of making rubber shoes in his location. Earlier type of rubber shoes produced and worn locally had a very different configuration, which he was able to completely transform as a result of the new material ; he developed a new type of product and a pioneering application for this rubber (Amadeu, 2011).

Before immersion in the community context, I spent about ten days in preparation, in partnership with the LATEQ team, in planning the field research logistics and methodology. Pastore facilitated my contact with the members of the community, as his team have a long-term association with them, having proposed the new FDL and FSA production technologies (Chapter 4) to them, and taught them how to work it.

Importantly, I analysed the design and productive aspect of José de Araújo's rubber shoes, and their integration into the market. At this point, in 2011, he was already enjoying the fruits of his labour, and was trying to develop a national market for his products, selling in handcrafts fairs and trying to find retailers. However, he was facing challenges, which, when I discussed the fieldwork with Pastore, I felt I could address in my research; from the initial analysis of the shoes, developed in preparation for the fieldwork (Figure 6.2), I had identified a number of technical, commercial and aesthetic

aspects which related to their quality and finishing. I also attempted to understand their production process in order to collaborate with him more fully and even to make suggestions.



Figure 6.2: Analysing rubber shoes at LATEQ, at the University of Brasilia, Brazil, November 2011.

Quality is linked both to the material the shoes are made from and their construction. For example, it is important that the rubber is processed according to the recipe taught by LATEQ in order to avoid rapid deterioration of the material. The quality of the shoes was linked to a good finish that, made them less likely to rip in use. Another aspect confirmed during fieldwork was the speed of production, which at the time was very slow; the problem was that Araújo was not earning enough to reinvest in better production and improve his family's economic situation. He produced only about three pairs a day, as a result of collecting the latex and making the shoes by himself. Considering these aspects was fundamental in the preparation of the field research, which contributed to our collaborative engagement on production. A question that

arose from this analysis was the feasibility of increasing production without compromising the human scale and his creativity in the handmade process.

An analysis of products includes a design method that is fundamental for the creation of ideas to improve existing products and to develop new ones. For me, this process was highly relevant, as it prepared me to engage in dialogue with the artisan producers and the community, to learn in a conscious way, drawing on previous experience in order to develop relevant questions, to demonstrate my interest in their work, and to make suggestions that they might find useful. From that previous analysis I developed a collaboration proposal.

The proposal included the use of a series of cutting-edge stamps. Through analysing the shoes it was possible to see that they were produced in modules, and some basic parts, such as the soles, were standard to all of them. The objective of the proposal was to promote dialogue and collaboration around the issues previously analysed and to test whether these tools could help the making of the shoes. I also developed a mould for a new product, a glasses case whose production would combine Araújo's technique of working with the rubber with my own.

The idea was that I could bring my working process to the community in order to stimulate an exchange of knowledge and experience. This proposal was open to the indeterminacy of the experience – that is, that collaboration could occur in an unexpected way or even not occur at all. Due to the difficulty of communicating (limited telephone calls), we were not able to arrange specifics of the process in

advance. Pastore facilitated the contact, and due to his influence the artisans and other members of the community were open to the idea of collaborating with me in my research.

Other actions taken before travelling were preparing audio-visual equipment, drafting semi-structured interviews, contacting people in the field and organizing travel logistics. During the field research, a dialogical process took place and was pivotal to enable us to collaborate with the community and to develop a continued partnership. In the following sections I will describe and reflect upon this process.

6.2.6 Methods and tools

The approach to this community was based on metadesign principles of collaboration. Thus, it was open, highly dialogical and collaborative. As we did not have any obligation to clients nor to meet any targets, it was possible to explore materials and ideas freely. During immersion in the community context, I made systematic use of field diary and notes. Also, an extensive audio-visual was produced.

For the collaborative approach, I prepared tools in advance with the objective of promoting an exchange between my methods of working with the rubber and the methods used by the local artisan producers. This I called ‘applied artefact’, aiming to motivate collaboration and an exchange between our techniques. These tools consisted of cutting stamps, as explained below – but there was no obligation whatsoever for the community to use them.

During this collaborative research process, I intuitively developed a joint agenda with the artisan producers. That agenda constituted a list of challenges, aims and potentials of the production, which resulted from notes that I had taken from conversations with the artisan producers. This became a valuable tool for reflective thinking both during the interactions and afterwards. The reflective methodology was applied as a post-rationalization of the fieldwork; it helped me to re-analyse the material as a whole, and added several insights as outcomes of the six perspectives of analysis.

6.3 Contextualization

The reflective methodology is applied throughout this chapter as a tool to create the narrative of the process and organize the collected data during field research, as well as to guide a reflection throughout the collaboration and exchange with the artisan producers and their community. Observations of the fieldwork were made along the way, recorded in my field diary; they were organized and analysed in the reflective methodology.

With the artisan producers and other community members, I also listed their perceptions of the strengths and challenges faced in the production of the rubber and the rubber artefacts. It became an important input for subsequent collective reflection with community members (Section 6.7.4). The first part of the reflective methodology relies on the contextualization and explanation of the collaborative practice, which is followed by the six perspectives of analysis. The contextualization of the interaction,

which is the field research, describes the situation of the community and of the artisan producers, the production process, the artefacts themselves, and the motivations of the participants, including those of the designer.

The contextualization follows, presenting the items above in an organic and descriptive way; thus the six perspectives of analysis will be applied. The objectives and methods have already been described; the process of collaboration is further explored through the analysis.

6.4 Artisan producers

José de Araújo is a prominent artisan from Assis Brasil, who became known by the nickname '*Doutor da Borracha*', 'Master of Rubber', due to his skill in making rubber artefacts. He started tapping rubber trees when he was eight years old. His father taught him how to produce a commodity rubber called CVP (*Cernambi Virgem Prensado*) and how to make laminated rubber shoes, which he wore in childhood. But decreasing demand for CVP and low market value prevented him from earning a living wage from rubber production, so in 2004 he learnt how to process FDL and in 2006 the FSA, both materials offering him the opportunity to increase his income through new markets and higher prices. Using rubber sheets, he started to develop shoes for the children and adults of his community. The difference between the rubber shoes typically produced in the region and the new rubber shoes can be summarized in two points: first, the traditional rubber shoes were not vulcanized, so were perishable (Chapter 2, Section 2.2.1); and secondly, the traditional technique had been one of

smoking liquid rubber in a wood mould, while FSA is rubber in sheet form; in order to make shoes from it, Araújo had to reinvent the entire production method, resulting in new models and a range of new possibilities. The new material provided him with more versatility and freedom of creation. Araújo has sold rubber shoes since 2007, and by 2011 in order to increase production capacity, he had taught other members of the community, such as Nazaré and her husband Elias, to manufacture the shoes. Using the integrated artefact method, Araújo and Nazaré manufactured 100% rubber shoes, including boots and ballet shoes (Panel 6.1).

I consider Araújo's creation rubber shoes as a bottom-up social innovation mixed with a top-down one, as the new method of rubber production (both FDL and FSA) had been suggested by the laboratory. According to Manzini (2013) a combination of bottom-up and top-down social innovation results from a connection between different instances and sectors, including individuals, groups and communities, to develop, replicate and expand social innovation together. This a phenomenon is well illustrated by this case; it shows that social innovation initiatives can emerge in a society as a flourishing bottom-up phenomenon generated by individual makers and groups, as pointed out by Carbonaro (in Black, 2012: 49): 'local communities are reinvestigating traditional artisanal modes of production, and small-scale solutions are popping up everywhere'. The Araújo example demonstrates how this process expands to other people and community members; the outcomes of his invention have benefited not only Nazaré but also many other people in his family, community and other communities, as will be shown later in this study.

Observing Araújo working, it was clear that he was a skilful and dedicated craftsman. Nevertheless, he struggled to earn a living from his work with the shoes. When I met him he was despondent and was considering discontinuing the production of the shoes. For instance, he complained about not having the capital needed to reinvest in material and structure; he also had difficulty in communicating with an outside market and dealing with logistics, as he was illiterate and had insufficient economic resources. Nazaré's situation was a bit better, however, as Elias was a teacher who enjoyed a certain status and better economic conditions in the village, so they found it easier to procure materials and deal with logistics. In an interview for this research, Nazaré (2011) said that she was generating more income with the shoes than in other jobs. Araújo eventually added Nazaré's production to his own, to sell in fairs.

Panel 6.1: Rubber shoes and other artefacts



Figures 6.3: Rubber shoes and accessories made by José Araújo and Delcilene Araújo, 2013–2014.
Photos: Araújo and family, 2014.



Shoes exhibited in the Brazilian Object Award (Araújo, 2013).

6.4.1 Locality, people and community leadership

This first subsection defines the participants; that is, who they are in relation to their community, productive activities and location. As already mentioned, the field research occurred in the municipality of Assis Brasil, a village in the Amazon rainforest bordering Peru and Bolivia. Rubber production is part of the economic, political, cultural and historical formation of this region, which is populated by a number of rubber-tapping families and other small producers spread around the rainforest and living within the productive conservation scheme (Chapter 2).



Figure 6.4: Assis Brasil is located in the state of Acre, bordering Peru and Bolivia.

Assis Brasil is served by a school, a hospital, a bank, a local market, a couple of churches, a police station, a local council and a cooperative of producers called AMOPREAB. The village functions as a base to the populations who live deep in the surrounding rainforest. Reaching the rubber tappers' families from Assis Brasil, requires a drive out into the forest of two or three hours by car or motorbike, then a walk of some distance, and quite often a boat trip as well, depending on the location. Even in Assis Brasil there is very limited electricity and phone signal, and virtually none in the depths of the forest. The village is strategically positioned on the border of the

country and is linked by road to Rio Branco - Acre's capital (Chapter 2, Panel 2.5); this was where my journey began.

Panel 6.2: Assis Brasil



Figure 6.5 and 6.6: Assis Brasil, Acre, Brazil, 2011.

Figure 6.7: Mayor of Assis Brasil, 2011. Figure 6.8: School, Assis Brasil, 2011.

During field research, I stayed in a guesthouse in Assis Brasil. I mainly worked with Araújo, but also with Nazaré and occasionally Elias; the couple had kindly offered us the use of the back area of their house to produce rubber and artefacts; Araújo lived deep inside the rainforest. I also interacted with other rubber tappers who lived in nearby enclaves in the forest inside the rainforest, allowing me to follow the rubber production process from source.

AMOPREAB, the producer cooperative situated in the village, played an important role in the community leadership and in supporting the collective production of rubber and nuts. The cooperative dealt with the clients, the logistics and bureaucracies. The FDL and FSA technologies were transferred through training workshops realised by the LATEQ laboratory at the University of Brasilia in coalition with the cooperative and other partners from the public and private sector. Of the local institutions – the council and environmental organizations – the producer's cooperative was the most relevant for the local producers, being part of the leadership of the community. The cooperative was composed of Assis Brasil residents, and its major role was to support the commercialization of the local products such as rubber and Brazil nuts to meet industrial demand. It organized individual production into collective bundles that could be sold to the industry, assisted the producers with bureaucracy, including invoices, contracts and other documents, and logistics, and it also organized the logistics of the materials, transporting the production from the rainforest to the clients. It worked closely with the local government to get subsidies and funding projects for the local population. The cooperative was formed by locals who had been or indeed still were rubber tappers, some of them having had the opportunity of attaining a higher level of education in other cities, then returning to work in their community, where they occupied positions of responsibility.

6.5 Collaboration through the artefacts

By establishing the content and objectives of the participatory activity, this section expands the description of the methodology, giving a more detailed explanation of the process employed by the artisans and in the collaboration. It relates to the content of the interaction; the artefact itself has a pivotal role in the interaction between the artisan producers and the designer, hence my suggestion that it be emphasized in the reflective methodology.

6.5.1 Motivations for collaborating

Community doors were opened for me through LATEQ. But until I arrived in the village, the motivations were not clear. The factor that, as I see it, brought us together in dialogue was my work with the rubber. When I wore some of my rubber jewellery this was a pivotal moment; it showed that I had knowledge and experience of working with rubber, so we could exchange ideas and maybe collaborate. The rubber linked us, and gave me a sense of integration in this community.

I observed that from the materiality of the rubber Araújo and Nazaré became sincerely interested in interacting with me. Both of them were interested in teaching me the ways they worked and in learning from me as well; we exchanged ideas through cooperating in making things, as well as in long conversations. Their interest lay in improving their shoes and thinking up ideas for the development of new artefacts.

For us, FSA functioned as a boundary object, promoting collaboration around a common practice and task (Jean Lave and Etienne Wenger, 1991) and became an artefact of mediation of the collaborative process (Engeström, 2001). FSA motivated us to share experiences and reflections on and beyond its materiality, and indeed enabled us to do so.

6.5.2 Reflecting upon the artefacts

Insights into the artefacts were important outcomes from the preparation and examination of this fieldwork. There is a basic difference between the artefacts manufactured *in situ*, and the artefact produced outside the rainforest: The rubber artefacts manufactured *in situ* can be shaped while the liquid latex is solidifying, when the rubber is wet, still malleable and sticky. Working at this stage of production enables the artisan producers to structure the material, and combine colours and textures. This phase depends on a particular production process, and I term this technique the ‘integrated artefact’. This is the method used by Araújo to make his shoes and other artefacts such as decorative panels, flags and jewellery. Once the FSA sheets are dry, they are no longer malleable, and they can be taken out of the rainforest and used to make artefacts. This method, which I term the ‘independent artefact’ is the way I produce my rubber jewellery (Chapter 3, Section 3.5; Chapter 8, Figure 8.1).

The ‘hybrid artefact’ is the third category of the rubber artefact, which results from combining these techniques – a mix of the integrated and the independent artefact.

6.5.3 Integrated artefact



Figure 6.9: Rubber shoe production. From top left to bottom right: collecting the latex; preparing the FSA mix; assembling a shoe; the final product. Assis Brasil, Acre, Brazil, 2011.

Figure 6.9 shows the production method developed by Araújo to make shoes. His method can only be carried out in the rainforest (or in a laboratory), as the rubber sheet must still be wet. This is the point when he structures the shoes; he developed it by learning about the FSA method. Because that method was so different from the traditional smoked latex (Chapter 2, Figure 2.5) method used to make the shoes typically worn by the rubber tappers, in his attempt to produce rubber shoes Araújo had to develop a complete new method.³¹ This resulted in radical technical and aesthetic changes in way the shoes were made. In the old method, the shoes result from the coagulation of liquid layers of latex around a wooden last.³² But Araújo's new method – the integrated artefact – uses modules of rubber sheets in a much more

³¹ Shoes produced in the rainforest using the smoked liquid latex are not commercial and not often worn even by rubber tappers. However older generations and rubber tappers who live deeper in the rainforest still produce these rubber shoes (Figure 6.17).

³² A foot-shaped mould used for constructing shoes.

controlled process, which enables, for example, more subtle shaping and colour matching. In this way, he opened up numerous possibilities for shoe design.

6.5.4 Hybrid artefact

A 'hybrid artefact' would result from a combination of independent and integrated artefacts. A collaboration between designer and artisan could result in the construction of the hybrid artefact, as shown in Figure 6.10:

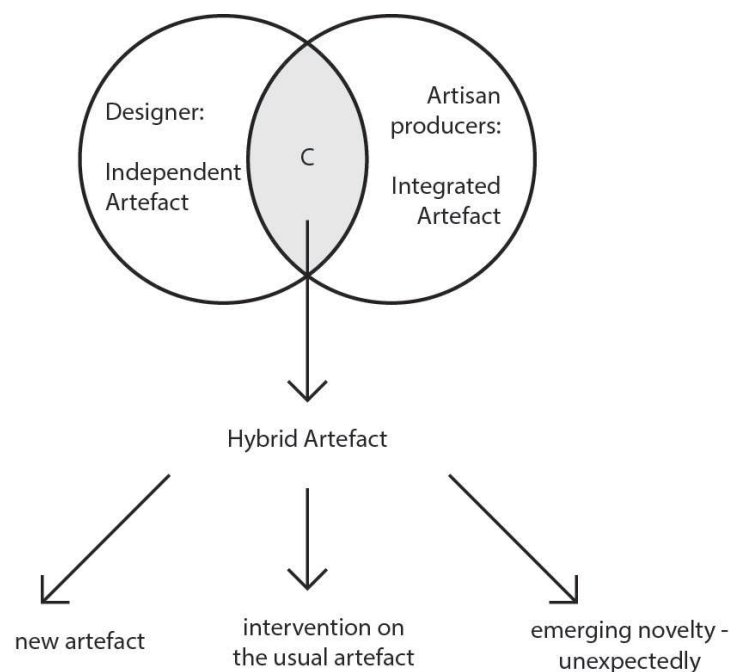


Figure 6.10: The construction of hybrid artefacts through design and artisan collaboration.

In Figure 6.10, C corresponds to the intersection between systems A and B through the mediating artefact, bringing together distinct ways of working with the same material, resulting in the hybrid artefact. As well as the anticipated results of such a

collaboration, a third possibility could emerge from it, called 'unexpected possibilities' by Engeström (2001).

6.5.5 Proposals for an hybrid artefact

In order to collaborate in the creation of a hybrid artefact combining our methods of working, I put forward two proposals:

- i. The application of new tools for making shoes.
- ii. The construction of a new artefact; I suggested developing of glasses cases.

These suggestions would bring together the integrated artefact method used by the artisans and the cutting stamps that I use in my own work. My intention was to promote an exchange of ideas, to show them the way I work with that material, and to suggest some new tools and a new method that they could apply to their work.

6.5.6 The 'applied artefact' in collaboration

The tools were die cutters (Figure 6.11) that cut the rubber sheet into predetermined shapes. My primary objective being to promote empathy between us, encouraging the sharing of ideas and experiences, I defined these tools as an 'applied artefact', that is an artefact applied to collaboration. The study of the design intervention in fact did not mean any obligation in terms of results, but brought up the question of whether collaboration between designer and artisan producers could make a contribution to the productive process, adding qualities to existing artefacts and creating new ones. Then, it would be asked whether other capabilities could arise from that.



Figure 6.11: The tool used to cut rubber strips for shoes and a pair of shoes made by Araújo, 2011-2012.

6.5.7 The making of the shoes with the applied artefacts

The first proposal related to the manufacture of the shoes, as previously stated (Section 6.2.5). One of their characteristics was their modular, layered structure (Figure 6.9), which the artisan producers cut by hand – but identical components could be cut out with the stamps, thus improving both the speed and the quality of production; that was where I perceived an opportunity to make my contribution.

The idea was to cut just the soles and the strips; this would improve certain aspects of their symmetry and finishing (Figure 6.11) without hampering the artisans' creativity, as the strips could be patterned in whatever way they wished. I did not expect to work on any other parts of the shoe, the intention at that point being merely to test the usability and possibilities of this technique and discuss them.

In this way, the hybrid artefacts combined the efficiency of design related to repetition in the production process, while maintaining the bespoke approach of the craftsmanship.



Figure 6.12 and 6.13: Artisans' hands assembling a child's rubber shoe on a wooden last, using rubber strips cut with the tools that I had provided. Assis Brasil, 2011.

6.5.8 A new hybrid artefact

The glasses case I had proposed would have a basic form that could be assembled while the rubber was still wet, then could be modified and decorated as desired. Panel 6.3 shows one of the prototypes. The reason for proposing the cases was to develop a new artefact that neither Araújo nor I had made before. The glasses case was simple to cut out and modify. Also, it was small, not requiring much rubber at this point. The function of the object defined its form, but that could then be decorated and modified in several ways.

Panel 6.3: Making a prototype glasses case



Figures 6.14: Araujo testing the cutting stamp to make a glasses case.

6.6 Shortcomings and outcomes

During the collaboration we employed the cutting stamps that I had prepared beforehand. When I had planned those cutting tools, I had expected that the rubber would be easier to press when wet – but in the event this did not work as out, as even in that phase the material is quite resilient. However, they helped to mark the parts

and then hand-cut them, as shown in Panel 6.3; this improved the finish already. We thought, however, that in order to get the true benefit of the tools, a cutting machine would be necessary.

The glasses cases worked well, and we discovered that a variety of products could be made in the same way. The use of the stamps clearly demonstrated their potential to increase the production rate and to refine the finishing and aesthetics, thus improving the production process and adding value to the final product.

What this process also did was to promote dialogue about not only about finishing, aesthetics and production methods, but also about many issues related to the artisan producers' wellbeing; for example, Araújo told me about his dreams of travelling to Rio de Janeiro, which he was happy to have realised by participating in a national fair for local products. He was proud of that. We also discussed the difficulties that he was still encountering in production inside the rainforest and communication with clients, among many others. These had a direct impact on his life and of his family. Through the collaborative process we reflected upon several issues, observing challenges and also visualizing solutions and different situations.

The pair of shoes of Figure 6.10 (Section 6.5.7) produced by Araújo in 2012 demonstrates that he implemented some of the ideas that we discussed; for example reducing the lateral line along the shoes, thus providing a finer finish. These shoes were exhibited in the *A Casa* (At Home) Museum in São Paulo the following year, where he won first prize for handcrafts, representing his community in the Brazilian Object Award 2012.

6.7 Reflecting through the six perspectives of analysis

What lies beyond representation is found 'within' it.

Paul Carter, 2007, 12.

The first half of this chapter provided an overview of the context, the people directly involved and the collaborative process. From this section, the chapter moves from description of the field research to reflection on the process of interaction between the designers and the artisan producers, including community members and other parties involved. By applying the six perspectives of reflective thinking, further narratives of the process come into play in order to encourage a more nuanced and deeper content for analysis. In this way, the reflective methodology can provide a more holistic view of the process of social change and sustainability able to inform design practice with artisan producers that occurs elsewhere.

This part of the reflective methodology expands the history of the interaction by exploring the relationships throughout the process. This is the most important part of the reflective methodology, in which the six perspectives for reflective thinking as devised in Chapter 5 are applied:

- Constellation;
- Diversity and conviviality;
- Narratives;
- Turning points;
- Creative integration;
- Resilience and legacy.

In a sense, I guided the reflection through the collaboration with the artisan; this was the method that I used to access qualitative data in order to answer the field research questions. Evidence showed later that he implemented actions based on our conversations, and developed them. I also made systematic use of field diary in which I noted reflections each day, and I took notes during my interactions with the community.

The reflective analysis was later developed to better guide the reflection during the practice by both artisan and designer, as well as becoming a tool to guide design research and practice within the approach to producer community. Through guiding collaborative reflection, the reflective methodology attempts to aid the expansion of capabilities (Chapter 5, Section 5.6.2).

6.7.1 Constellation

The interaction between the designer and the artisan producers in a process of social innovation or social entrepreneurship can never be detached from a large network of relations. In addition to the designer's and the artisan producers' specific backgrounds and experiences which they share to some extent during their collaboration, the networks of relations that each of them are connected to also become part of the interaction. Thus, in consequence of bringing two or more activity systems together, as suggested by Engeström (2001; 1999), the interactions are between not just different practices, but also between new elements and actors networked with the subjects of the interaction (the designer and the artisan producers). This meeting of minds brings

in common connections – and new ones that expand and reinforce the network of relations related to the context of social innovation. Section 6.2 sets out the people and the context that comprise the community. The illustration represents this network of relations.

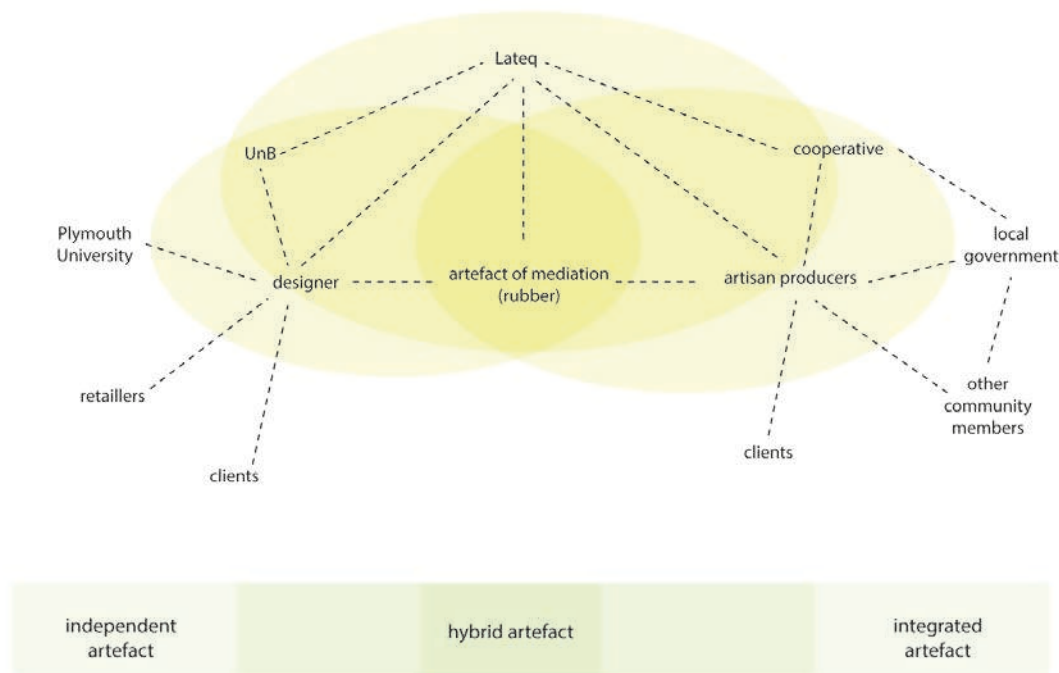


Figure 6.15: Minimum constellation and the artefacts

The chart above represents the minimum constellation of this field research, constituting a network of actors, both human and non-human. In this constellation, it is the rubber that mediates the relationships and establishes the interconnections. As will be seen in the following sections, as a consequence of our collaboration, Araújo formed a connection with a new market, and I formed connections not just to his community but to an extended network that then enabled me to connect with other communities. The constellation demonstrates that social innovation entails multiple relationships which affect each other.

The network of relations can be represented in various ways to bring about an understanding of the relationships and the connections; a Venn diagram, for example, illustrates the exchanges of knowledge arising from the various relationships between the parties involved. Each circle represents an activity system: the LATEQ laboratory, responsible for transferring the new rubber technology to this community; the main artisan and the community; and me, a researcher and designer experienced with working with the material.

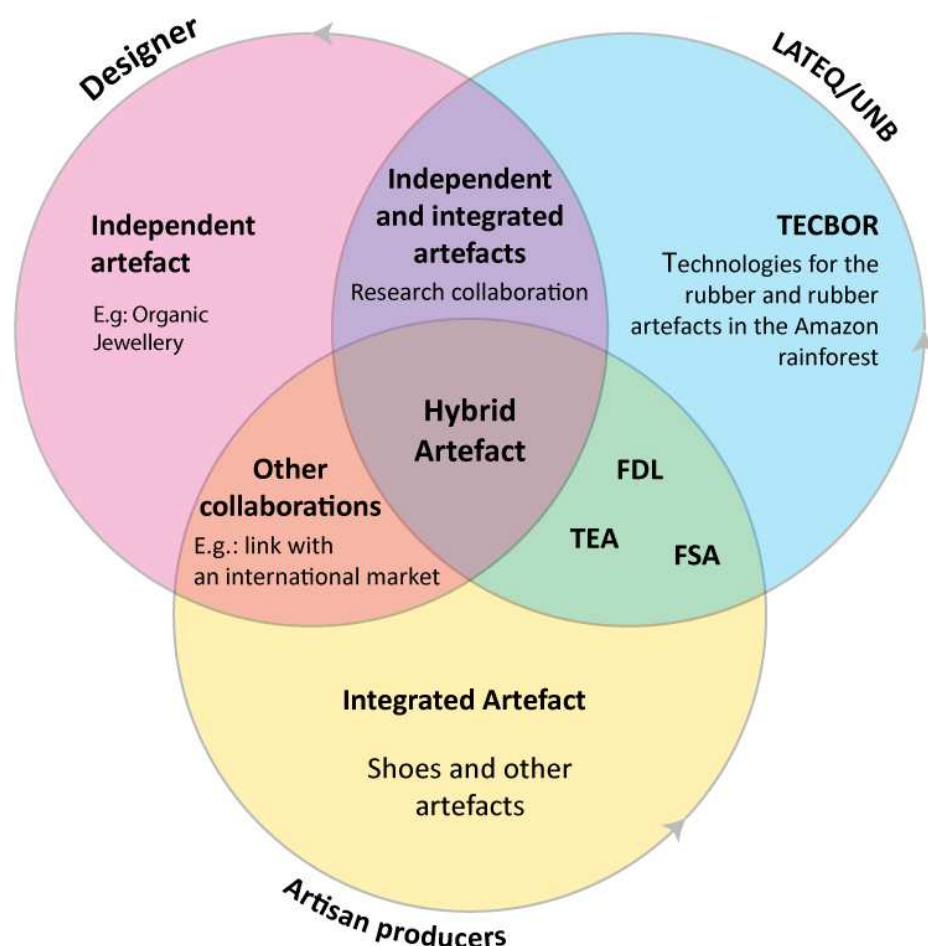


Figure 6.16: Circulation of knowledge.

Figure 6.16 shows the artefacts in the overlaps between the designer, the laboratory and the artisan producers. This is a simplified way to see how one connection affects and relates to another, in which, through collaborative actions, the social innovation of the rubber is continued³³. I call this process of mutual learning and sharing a ‘circulation of knowledge’ which is intellectual, tacit and empirical. That means that the conversations and interactions that occur through the rubber contribute to reinforcing the disciplinary fields and the individual practices. This knowledge and these practices combine to generate hybrid artefacts, in the process also generating new cultural meaning.

6.7.2 Diversity and Conviviality

Although collaboration is a mainstay of design research for social innovation and sustainability, the way the actual relationships between the designer, locals and other stakeholders actually unfold is rarely documented and discussed. Chapter 4 exemplified how an interaction between designer and artisan producers that is intended to contribute to social change and sustainability can in the event fail. It also presented cases of continuous and long-term relationships between design entrepreneurs and local producers. It is important to analyse how the synergy between people from different cultural backgrounds and interests develops, because such an analysis may raise awareness of the elements, aspects and attitudes that contribute to the collaborative process. It can also reveal the reasons behind any problems that prevent this process or upset it. Reflecting upon capabilities in relation

³³ I consider the diagram (Figure 6.15) a simplified model because in reality this system is not a closed one like this, but a complex and multidimensional constellation of relations.

to the social interaction is of critical importance and definitely needs to be incorporated in the processes that follow production and the relationship during collaboration.

During my immersion in the community context I felt that there was respect, a sense of parity and solidarity, in which we mutually shared our knowledge and practices related to the rubber artefacts. The community members supported my research by welcoming me into their midst and showing their work to me, while I tried to identify how I could make a positive contribution to their work.

Contributing factors in the conviviality included:

- i) Shared language: this definitely facilitated the engagement;
- ii) Introduction by a trusted source: previous contact with the community, through LATEQ/UNB's intermediation;
- iii) Shared interest in the material: the fact that I also worked with FSA seems to have connected us empathetically, positioning me as a peer;
- iv) Acknowledgement that each of us had knowledge of value to the other, generating an interest in mutual learning;
- v) History of working with the material.

The conversation below gives a hint of how the rubber became a boundary object:

[In a conversation with the artisan producer José de Araújo], I told him that I had been working with the coloured rubber since 2004, which he found coincidental, as he had begun to develop his rubber shoes that same year. He explained to me how he became an artisan and asked me the following: 'How would you explain what design is to a class of students?' I answered that design

could have different meanings, that it could be a profession, but also that anybody can design (...). To that, he replied he wanted to be a designer. I told him he was already a designer – and that I too was an artisan. He gave me a big smile (Field diary, my translation, 2011).

As a result of this short conversation, I was introduced to everyone in the community as an artisan, like them. I was endorsed by him and by his community because they recognized me as a peer; so the rubber was not just an element common to us all, but an element of mutual recognition between practitioners.

Araújo and Nazaré were receptive to the cutting tools, testing them as already described. Meanwhile, I was able follow the whole productive process in the rainforest, which complemented my knowledge and experience of working with this material. We discussed the finishing of the shoes at length. Together we developed a couple of new types of shoe, trying to implement my suggestions for finishing, for example to diminish the height of the sides of the shoes and to develop textured soles, as the existing ones were very smooth and hence slippery. We also discussed new ideas for rubber artefacts. We shared ideas through making and also by looking through new patterns and textures in a design and craft catalogue that I had brought with me and gave to them as they became inspired.

Araújo, Nazaré and other people from the community who came to see what we were doing, realised that FSA could be used to create a range of other artefacts as well as shoes. During this process, we discussed the challenges of production and sales. They also let me know of their aims and their visions for the rubber artefacts. Making notes of these points, we formulated a joint agenda listing the challenges, potentials and

objectives. In this I included their points of view, my own observations, and the possibilities that we devised. By doing this, we identified a number of material and immaterial issues related to local production that were also related to their current capabilities (Table 6.1).

The dialogical approach and our desire to share our interest in FSA were crucial to the experience. From my viewpoint there was no hierarchy between us, but there was mutual admiration for the different types of work we had achieved with the material and a sense of solidarity throughout the process. This synergy was expressed to Nazaré while we worked together on the production of rubber shoes and glasses cases in her house:

Many people visit us and want to see our work; they ask lots of questions, but they are just curious. I like you because you are here to work together. You share ideas and solutions. Nazaré (Field diary, my translation, 2011)

I interpret that through these words, Nazaré expressed her satisfaction at not feeling like a mere object of research. Rather, we could mutually teach and learn from each other.

Although this experience felt extremely positive in the short term, the chance of it not turning out in this way was also a risk that I had taken before embarking on the journey to the community. As discussed in Chapter 4, the quality of the relationships appears to be fundamental to the drivers and motivators of these interactions. They appear to directly influence the perception of the outcomes of the interaction, from the points of view of both the community and the designer. Araújo in his interview

(2014) did not talk so much about the work we did together during that week, but highlighted the personal outcomes he gained from it, such as the confidence to give continuity to his work, the new insights and the friendship that developed from a sense of trust.

The degree of diversity and conviviality is specific and unique to each interaction, but through attempting to perceive these, it may be possible to learn from the process and thus better understand how the activities of the interaction may resonate more deeply with people – perhaps leading to future collaboration, partnerships and friendship. The failure of a project may also be a valuable lesson, if the designer can elicit from it the cause of the tensions or negative experience, and from that work out what to change in order to move forward.

6.7.3 Narratives

People feel joy, as opposed to pleasure, to the extent that their activities are creative.
Ilich, 1973, 20

Although I had previously studied the history of the rubber-tapping communities and their context in the Amazon rainforest, a more holistic understanding only came with the lived experience in the locality. Oral history allowed me to develop a deep comprehension of the local culture in this immersive context, where the history of the rubber tappers came alive, manifested through the multiple voices of the community.

Through this field research I could trace the history of the rubber shoes and get a hint of the reasons why Araújo turned FSA into shoes rather than other artefacts. The

genealogy of the shoes could be traced from the old technique of manufacturing rubber boots, which was a traditional garment produced by the rubber tappers for their family's and their own use in the long walks in the rainforest. So Araújo's innovative rubber shoes originated from the combination of his experience with his father and the new material, which he transformed through engaging creatively with it.

It was in his childhood that Araújo (2011, 2014) had learnt how to make rubber shoes. Guiding me through the old process of making rubber, Araújo revisited his childhood, remembering learning rubber-tapping with his father, who used to make rubber boots for the whole family. He used to put nails into the soles in order to construct stronger boots giving better foot protection. The boots were made by smoking layers of latex around a wooden last. Such boots, created using an ancient technique developed by pre-Columbian people, are still worn by natives (see Chapter 2). These kinds of laminated rubber shoes were also shaped over wooden lasts, which formed the foundation for the assembly of Araújo's shoes. In order to develop shoes from the rubber sheets, Araújo needed to re-invent the method, as smoking was no longer used. This exploration of the material led him to discover that he could develop many different models of shoe. In following this process, the heritage of FSA footwear came to light.

Figure 6.17 shows a pair of rubber boots made by Araújo. The new process using FSA produces boots similar to the originals. The lady wearing them told me that her husband used to make her boots, but after a while they got floppy and became

deformed. When Araújo developed his FSA boots she replaced her old ones with his boots.



Figure 6.17: New FSA boots to replace laminated ones. Resex Chico Mendes, Acre (2011).

Figure 6.18: Rubber boots made of FSA; model adapted by Araújo.

Many other stories came to light through the voices of different people in the community, making clear how their identity was related to rubber. Nazaré and Elias told me about their travels to the countryside of northeast Brazil to try to find the relatives her grandfather used to talk about. Chapter 4 described the labour migration to the rainforest during World War II; Nazaré's grandfather was one of the 1,000 men who lost track of their family of origin after being unable to go home. After more than 50 years, she managed to go to meet the family. The significance of the stories of the place provide further understanding of the sense of identity and the social and political engagement which have developed strongly in rubber tappers since the 1970s (Chapter 4), and of processes of individual and social change; further understanding also of the history of the place, the people and the artefacts, that in the case of Assis Brasil is intrinsically connected to the rubber.

6.7.4 Turning Points

Turning points are manifestations of insights and transformative moments. In this section I report a moment of collaborative reflection which I consider a highlight of the field research. The adapted extract from field diary below sets out the scenario of a meeting that I considered a turning point:

Pastore joined us on a rainy Thursday for an important meeting. About nine people, including Araújo, Elias and community leaders gathered together with the aim of debating pressing issues related to the sustainability of the rubber-tapping activity in the municipality of Assis Brasil. They were concerned about the fact that they had only one industrial client buying their local rubber (FDL and CVP) at that time. An eventual discontinuity of orders could compromise the local economy if new clients and alternatives of production were not created. This situation was threatening the community, as the cooperative was already facing difficulties due to a series of issues related to logistics and administration, lack of funding and support, and difficulties in the relationship with the client.

Despite these problems, the industrial client was of great importance, generating the income to support many rubber tappers' families. The meeting was chaired by Pastore, and the participants brought their concerns to the table, articulating the problems they faced in this context. Through this discussion, the challenges that were making the community's production unviable were raised and discussed. The group mobilized itself to take immediate action, such as asking the local government to help transport rubber sheets (FDL) in bulk that were stuck in several production units in the rainforest.

On the one hand the producers and the cooperative were not able to rise to the demands of the client – but on the other, it seems that there was a lack of support and understanding regarding the viability of the local production.

During the second half of the meeting I presented some points of the agenda that had been formulated with the artisan producers during the collaboration (Table 6.1). The full agenda was a list of needs, limitations, challenges, objectives, goals, capacities and

potentials of the artisan producers. Unexpectedly, each point that was brought up transformed the tension of the earlier part of the meeting into a lively discussion that not only generated solutions and alternatives for the artisan producers, but also focused on finding solutions to problems discussed earlier; the discussion about the industrial production of the commodity rubber moved towards the local production of rubber artefacts. Then the group discussed strategies to support the artisan producers and, in consequence, the whole community. The idea that emerged was to expand the enterprise of rubber artefacts to other members of the community; for example, by creating a local structure to produce rubber soles and other rubber artefacts, more community members could be employed. Table 6.1 lists some of the issues and alternatives discussed.

This discussion appeared to have brought up some alternative perspectives for local rubber production. Importantly, the recognition of the potentiality of the local handcrafts came to light as a way of strengthening the local economy and social inclusion. The conversation stimulated the group to think of alternatives for the continued viability of the rubber production, and so too of their community and the rainforest. The feasibility of the solutions was also taken into consideration. The group recognized that increasing the local demand of rubber for the production of the artefacts could boost the local economy. This could happen through supporting local handcrafts and also by developing local businesses. The concept of localism became valuable to the group, who were able to visualize a possible future for the sustainability of the rubber-tapping activity. It could generate employability, and stimulate young adults to give continuity to productive conservancy in the rainforest.

Ilich (1973, 73) offers the view that through shared responsibilities and initiatives change is possible, and industrial hegemony can be replaced by a more balanced society,

Continued convivial reconstruction depends on the degree to which society protects the power of individuals and of communities to choose their own styles of life through effective, small-scale renewal.

The perspectives that emerged from this conversation seem to have directed actions along this route. On the following day, one of the community leaders summarized the meeting, listing the actions and ideas that emerged from it. Apart from some immediate actions to actual problems, one of the most insightful conclusions of the meeting was that the community should find alternatives for a more autonomous rubber production in order to create a relative independence from outside buyers. For the first time, the handcrafts acquired a purpose to the productive conservation of the rubber in the Amazon rainforest. An increase in the production of local artefacts would lead to greater consumption of the latex, thus driving increased rubber-tapping activity. Consequently, a healthier local economy would diminish their dependency on industrial demand and at the same time stimulate continuity of the activity and generate jobs.

The initial intention of the agenda, which was elaborated with Araújo and Nazaré, was to promote a later analysis of the challenges of social innovation in this context and find ways in which the designer, in this case myself, could nurture this process in some way. The unplanned participation of other community members in the discussion of

this content seemed to have given voice to the artisan producers and to have brought another perspective to the community leaders.

The turning points can also be thought of as a metadesign process. According to Giaccardi (2005, 343) metadesign relies on the generation of contexts through creative conversations (Chapter 5, Section 5.6.1). The meeting was a very important moment, functioning as a means to give a voice to the artisan producers. The points raised engaged the participants in a constructive reflection to find alternative ways of tackling the social and economic problems they were facing.

After this meeting, Araújo approached Pastore and me, and emphatically announced:

*Today I took a decision for my life: I will study.
I want to learn reading and writing.*

It was a memorable moment that became a reality soon after this event, with his admission into the rural school.

Table 6.1: Joint agenda and proposed ideas

Discussed Points	Challenges or issues	Proposed solutions or ideas of action
Know-how	<ul style="list-style-type: none"> - FSA techniques not widely known. - The making of rubber artefacts to be disseminated to rubber-tapping families. 	<ul style="list-style-type: none"> - Training extended to more people in the community. Specialization of the community in the manufacture of certain products. - Leadership of the producer cooperative to formulate a project to get funding. LATEQ and the designer to support.
Communication	<ul style="list-style-type: none"> - Limited means of communication: unstable phone signal and internet access. 	<ul style="list-style-type: none"> - Further support of the association and local council to the artisan producers to help communication with clients and suppliers of materials. - We also spoke to the mayor enquiring about the phone signal in the region.
Employability	<ul style="list-style-type: none"> - Lack of interest in young adults to continue rubber-tapping due to the low rates and long journeys. - Migration to urban centres and change of the nature of the economic activity to predatory ones (e.g.: monoculture, cattle farming, sub-employment in big farms). - Limited opportunities to work. 	<ul style="list-style-type: none"> - Work generation though expanding the manufacture of rubber artefacts/products locally. - Crafts as a way to strengthen the local economy. FSA and the artefacts a possible ways of attracting women and young people to the rubber activities and including them in them. - The production of FSA as a product of higher value.
Preservation of the rainforest	<ul style="list-style-type: none"> - Deep concern about the continuation of the rubber activity linked to the preservation of the rainforest. 	<ul style="list-style-type: none"> - An ecological tourism project, which could involve locals and also sell handcrafts and other local products.
Logistics and bureaucracies	<ul style="list-style-type: none"> - Illiteracy of rubber tappers, difficulty of communication, distance to bigger cities. 	<ul style="list-style-type: none"> - Cooperative to give further assistance to the artisan producers in order to help them with written communication (emails), bureaucracy and logistics.
Products and production	<ul style="list-style-type: none"> - Lack of the local structure needed to produce rubber artefacts. 	<ul style="list-style-type: none"> - Ideas for new rubber products and the organization of their production. - Use of physical spaces belonging to the local council and the producer cooperative to hold courses and to produce rubber artefacts. - Ideas for a small industry to produce goods derived from the local rubber. E.g.: shoe soles made of rubber in a semi-industrial process.
Recognition / Value of the local artisans	<ul style="list-style-type: none"> - The rubber artefacts were not recognised as having a role in the economy of the municipal area. 	<ul style="list-style-type: none"> - The meeting appeared to have generated a recognition of the importance of design and crafts in the community's leaders. Perception that local production could strengthen social inclusion and local economy.
Resources	<ul style="list-style-type: none"> - Quality of the rubber sheets affected by the lack of necessary additives. - Necessity for further support by the lab to deal with chemical suppliers. 	<ul style="list-style-type: none"> - Pastore committed to help, but clarified the necessity of community cooperative to support the artisan producers with this. He indicated other suppliers that could be contacted, and with whom he would facilitate the initial communication.
Technological improvements	<ul style="list-style-type: none"> - Small scale of production of the rubber shoes. Possibility of developing other products. Very limited scale of production because of the methods used. 	<ul style="list-style-type: none"> - Rubber sheets, moulds, machinery, tools. Ideas for optimizing the tapping of the rubber trees. - We discussed ideas that could optimize the work, but at the same time retain the creative element.
Quality of the coloured rubber sheets	<ul style="list-style-type: none"> - Quality of the rubber sheets affected due to the lack of necessary additives. - A need for further training to improve the production of the rubber sheets and update producers on last researched practices that could result in rubber sheets with better characteristics, such as reducing their strong smell. 	<ul style="list-style-type: none"> - Re-connection with LATEQ with reinforced support to deal with suppliers and provide further capacitation.
Transport	<ul style="list-style-type: none"> - Lack of transport or limited fuel to transport stocks from the depths of the rainforest to the village. 	<ul style="list-style-type: none"> - Cooperative to negotiate the support of the government of the State.
Visual communication and informative material	<ul style="list-style-type: none"> - There was no logo, visual material or certification that could identify the origins of the handcrafts made by the artisan producers. 	<ul style="list-style-type: none"> - A common visual identity and information leaflets etc about the handcrafts and the origin of the rubber were considered by community members as a strategy to reinforce the cooperative, the community and the artisans.

6.7.5 Technological and creative integration

Creative integration occurs when a technological innovation or new ideas are integrated into local routine by being adapted and developed to fit with the habits, culture and conditions of the place. Thus, social innovation can be a short-term, medium-term and long-term process. For example, where both FDL and FSA rubber sheets became part of the local economic activity of the rubber tappers of the Assis Brasil area, technological integration occurred. Technological and creative integration signals the occurrence of social innovation where the adoption of new methods of production becomes a means of socio-economic change. These can also instigate cultural changes where they become part of local practices. While technological integration can be more related to methods, creative integration can be a deeper exploration of new ideas, technologies and strategies in which further transformations can happen. This is the case of Araújo who, through sensorial engagement with the new method and material allied to his cultural heritage, his tacit knowledge, his imagination and his intuition, developed the rubber shoes. He became an expert in the production of FSA and rubber artefacts. For instance, his know-how about the rubber enables him to make changes to the recipe of the rubber in order to control the times required for coagulation, consistency and dyeing. His exploration of this technique led him to discover his potential as an artisan, which he sees as an important milestone in his life.

He mentioned the lack of expectation he had had before these processes of social innovation related to the rubber took place:

*The rubber tapper was nobody before; today we can be someone
(Araújo, 2011).*

Through his creative work Araújo became 'someone'. As well as being relating to economic gains, this feeling was related to the recognition he acquired from his communities, from other rubber tappers, and from people who now know his work – nationally and internationally. During the field research, I saw how popular Araújo was among the community, as shown in the extract from my field diary below.

*While we walked through the village, the neighbours came to the window and shouted 'Doutor! Doutor! Are my shoes ready?'; 'Doutor, I want you to make rubber shoes for my toddler with the Flamengo [football team] emblem'. And that was on-going ...
(Field diary, 2011).*

At the time he explained that it had not always been like that – that people had not believed in his work when he had begun to make the shoes; but it changed as he improved the technique and developed different models. Nowadays, too, many people want to learn from him. For him the community is both a consumer market and a testing market, as he receives feedback from its members about his shoes. As he became known elsewhere, the community was highlighted and linked to his work, reinforcing its members' sense of identity and pride. The recognition of his neighbours was of great value to him. He is a great example of how social innovation can grow and flourish.

Our collaboration seems to have influenced the improvement of the finish of the shoes, which can be considered a short-term outcome of our interaction, and technological and creative integration. Araújo felt that my cutting tool would be a good solution to help increase the production rate. However, even when wet the rubber is resistant to cutting and therefore a machine, which could be a mechanical one, would be necessary in order to optimize this process – but this would require further investment. So he has to continue cutting the modules by hand, until the necessary funding is found in the future, perhaps through projects. While my tool did not work as I had expected, it appears that he developed other fabrication strategies in which he paid more attention to the finishing. Another short-term creative result from the process of the collaboration was the expansion of his range of products. He did not continue to produce the glasses cases, but he did begin to develop jewellery, decorative panels, souvenirs, and curtains, among other objects.

The following panel contains images of Araújo's work from 2012 to 2014. The creative integration of new methods of production generated a new boundary object that linked the artisan producers, nature, and markets with a sense of identity and self-esteem. That is in itself highly productive.

6.8 Resilience and legacy

To have met you all was the root of my transformation, when my history began.
Araújo referring to the LATEQ team and me (2014)

The concepts of resilience and legacy refer to the short-, medium- and long-term outcomes of the interactions between the designer and the artisan producers in the process of social innovation. The interactions are bound to have consequences, whether direct or indirect. This section aims to indicate whether there was a resonance of the dialogues and actions developed during the collaboration over a period of time. The concepts of resilience and legacy encourage the designer to reflect on the ways in which their relationship with the artisan producers, the community and the network developed over time, and to express them. These developments include: whether the relationship continued, and if so what it entailed in terms of challenges and new opportunities; and if the research or project reached an end, the kind of legacy that was left by the collaborative process.

After intense ten days immersed in field research in Assis Brasil, I kept in touch with Araújo and his wife, and eventually with some other members of the community. Although the time I spent in the community was limited, the encounter resulted in a long-term partnership and friendship with Araújo and his wife. In order to reassess the experience and the outcomes of our 2011 collaboration, in January 2014 I interviewed Araújo and his wife and his business partner, the artisan Delcilene de Araújo, by Skype (Figure 6.19). Through this interview and continued contact with other people involved in this network, I was able to find out about some of the changes that had occurred

within this community context and in the artisan producers' enterprise. So our collaboration expanded beyond the immediate outcomes of the fieldwork such as testing the tools, gaining a deeper understanding of the context; it extended into further collaboration, friendship and work (Chapters 7, 8). Later I also got in touch with some other members of the community, who were also very kind, and keen to update me about their work and life, showing interest in future projects. This shows the longitudinal nature of the interactions.



Figure 6.19: Screen shot of Skype interview with Araújo and Delcilene de Araújo. Araújo was showing me a different kind of rubber and a pair of shoes; I am in the thumbnail, 2014.

The difficulties of communication caused the loss of my direct contact with Nazaré, who I learnt had moved with her family from the village to a location inside the rainforest. As it was, I could only keep in touch with Araújo because he used to travel to other cities where the telephone signals were better. Later, he also moved to another municipal area, where the phone signal was much better. By keeping in touch,

it was possible to develop other kinds of collaboration as well as friendship. This enabled me to observe the manifestation of new capabilities.

The capability approach can help to examine the collaborative approach to producer community (Chapter 3). It considers whether this process implied a material and immaterial relevance on the enhancement of capabilities and wellbeing through indirectly influencing economic production and social change whilst directly influencing people's wellbeing and freedom (Sen, 1999: 296-297).

Whilst I perceive that I played a part in the development of further capabilities of Araújo and other people from this community, I also recognize that from these interactions my own skills related to the rubber and to my ability to deal with a project related to local communities had increased. Evidence suggests that the collaborative process was also beneficial to Araújo, as shown in the excerpt below. During our 2014 interview, I wondered whether our collaboration through design research could have contributed to his wellbeing in any way. To the question of whether our encounter in 2011 had been important to him, Araújo replied:

The encounter with you gave me strength to continue my work. I was at a difficult point in my life; I was thinking of giving up. You gave me new ideas, which stimulated me to improve and create new products, using my creativity. Most of all, even from afar, you have always been supportive. You have been someone we can count on and trust (José de Araújo, 2014, author's translation).

In 2011, Araújo was already recognized for his craftsmanship with rubber. However, when we met, he was facing challenges that threatened the continuation of this activity; he was afraid that he could not make a living for himself and his family from

the work that he did in the rainforest (Chapter 3). In our encounters to date, however, I have observed and to some extent participated in a transformative process of enhancing Araújo's skills that he then extended to his family, his community and other rubber-tapping communities.

The collaboration appears to have boosted Araújo's creative enthusiasm and confidence; during the interview, his wife endorsed this opinion. More than words, this was in fact translated in the subsequent actions following the collaboration by the creation of diverse artefacts, including a stream of new and innovative models of shoes, and a number of new rubber products that have gradually come to life from 2012 such as jewellery, panels, flags and curtains. Since then, Araújo has greatly improved the finish and aesthetics of the shoes, guaranteeing him first prize in the 'Community Handcrafts' category in a national design and handcrafts competition to which I submitted his work (Figure 6.11).³⁴ In 2014, as a way of increasing his production rate, like Nazaré in 2011 he employed some more rubber tappers. As far as I am concerned, the continued contact with Araújo enabled me to further support his work and also to develop further work partnerships.

³⁴ *3º Prêmio do Objeto Brasileiro* (Third Design and Crafts Brazilian Object Award) at the A Casa Museum from 17 October 2012 to 19 January 2013. Available at: http://www.acasa.org.br/reg_mv/OB-01930/960e2001633c0c3cb7b59693f5ba7f92 Access: 12 April 2015.

Table 6.2: Actions during and after collaboration

Challenges / Needs /Aims	Collaborations /Actions / Support	Actions / Outcomes / Shortcomings
Finish, quality and aesthetics	Collaboration and dialogue about these issues.	Improvement of the aspects that we discussed. Creation of new models and products.
Scale of production	Cutting stamps. Advice.	Partnership with other rubber tappers and artisans
Sales	Contact with a European retailer, Handcraftprint.	He currently has retailers in Brazil and in Europe. He also sells his rubber shoes in national social innovation fairs. He participated in Milan Design Week ³⁵ in 2014.
Logistics	Temporary support relating to communication with European supplier, in order to link him with this market.	Improved since Delcilene got involved.
Communication with customers (Illiteracy, time limitation allied to lack of signal inside the rainforest)		Facilitated by Delcilene.
Recognition	Submission of his work in design and crafts competition	The competition further promoted the rubber shoes as he won First Prize, so his work was exhibited in São Paulo and publicized.
Transport (Araújo had to walk for many hours from the city to his house in the rainforest depth).		With the prize money he was able to buy a motorbike – and by the end of 2014 he had bought a car.
Fungus	Intermediation of communication with the laboratory for the supply of vulcanizing chemicals. Efforts for more autonomous contact for the artisan producers to acquire the additives. Reinforcement of the importance of using the vulcanizing in the production process.	I still need help with this task, as Araújo and the other producers depend on this ingredient in order to produce FSA. WWF (Acre, Brazil) has also been trying to help with the supply of these chemical and the concomitant bureaucracy – WWF has told cooperatives how to deal with the red tape.
Graphic design	In 2012 I had developed a logo and materials (banner, business cards and so on) for Araújo's products he now has a new brand, developed by Sebrae, which is used by other artisan producers as well.
Production structure		Has improved since his economic situation improved.
Working capital	Contact with new retailers and customers in both Europe and Brazil. Establishment of a retailer in Europe. Contract to teach the FSA process to another community.	He could generate more capital by teaching other communities how to produce FDL and FSA rubber sheets, and to make rubber handcrafts. He could then invest further in structure and materials.

³⁵ Milan Design Week 2014, *Brasil SA*. Available at: <http://www.brazilsa.com.br/site/edicoes-milao-2014.php>
Accessed: 12 April 2014.

As shown in Table 6.3, this artisan producer enhanced his capabilities by making the most of the collaboration with numerous stakeholders and dedicating himself to learning about the potentials of the material and improving his work. This was evidenced by the improvement of his socio-economic condition, the expansion of his work to other people and the confidence that he manifestly acquired. This in turn means a better standard of living for his family and indeed for other communities, who have him as a teacher and also as a role model; for example, the Curralinho community has now become a major producer of FSA.



Figure 6.20: Araújo leading a workshop with the rubber-tapping Curralinho community in 2013.



Figure 6.21: Shoes and necklace made by artisan Francisca da Silva, who had learned his trade from Araújo. Photo sent by Araújo of the Milan Design Week, 2014.



Figure 6.22: Shoes exhibited in Milan Design Week in 2014.

Since 2011, Araújo has received thoughtful support from the LATEQ team and from me. He has also established other partnerships throughout these years, with the local government of the state of Acre, Sebrae-Acre, WWF and Handcraftprint. Indeed, his dedication and commitment were factors crucial to his success. Another important aspect is the support he was given by his family – including especially his wife, his niece and his oldest son, who have joined him in his enterprise. When I interviewed him about how he feels about his work nowadays, he listed the following:

- His product has value and he feels valued.
- His economic life has improved and he does not struggle financially any more. He is now able to provide a much better lifestyle for his children.

- He has an even deeper respect and love for the rainforest, from which come the resources he lives on.
- He is a happy person, who loves his work and his life.

The transformation Araújo achieved in his life was the real outcome of his choices and dedication, once he had the skills and the conditions to realise his potential – that is, once the capabilities of realization were in place.

There were, and still are, challenges related to the socio-economic conditions, logistics, transport, retailing, production structure, living conditions, production capacity, emotional issues and illiteracy, among others. His socio-economic situation changed as a consequence of his efforts and multiple collaborations. Currently, he continues to live, and produce, in the rainforest, where he has built a good house for himself and his family and improved his access to communication. He has also bought a motorbike and, more recently, a car, which are very important, allowing him to get into and out the rainforest easily and quickly, a journey that in the past could take days of walking; for him, transport is a basic element that enables him to deal with logistics and travelling. Soon after the field research, Araújo met his wife Delcilene Araújo; she became his partner in the enterprise, responsible for dealing with clients and taking care of logistics and bureaucracy. As a consequence of his work, new opportunities have presented themselves to many other people, from members of his family and community to other communities in the rainforest. He has taught many communities, in both the making of the rubber sheets and artefacts. He has worked in partnership with other rubber tappers and artisan producers trained by him. Araújo keeps on

improving his work and teaching other producers. His sense of satisfaction with his work and life are evidence of the wellbeing he told me about in his interview. He also continues to study.

Araújo uses the word 'design' to talk about his new creations. This reminds me of the first time when we met and he asked me what design meant, saying that he would like to be a designer, to which I answered: 'You already are, as I am also an artisan'. As a designer, the role I believe I had for Araújo's transformation was one of advisor and facilitator. In terms of design, I have advised him about finishing, the overall quality of the material and the shoes, and improvements in some functional aspects, and have given some tips to increase the scale of production. Since our initial collaboration in December 2011 I have observed the improvement in his shoes and the new maturity of his work. Through online communication with Delcilene I have been regularly updated about their work and creations, and been able both to give advice and to assist by contacting suppliers of materials or potential retailers. As another contribution to his work, I later developed the logo and branding. From that point, other designers approached him, as well as retailers and institutions that contracted him to teach other communities in the Amazon rainforest how to produce FSA and artefacts. Eventually, at a point when no other rubber tappers were operating, it was he who produced rubber sheets for my work. In 2013, together with WWF, I was able to forge a deal for him to teach rubber tappers from another community.

I consider the history of this artisan producer as a splendid example of how can individual's skills and sustainability can be expanded through empowerment, and how

this can turn into a collective benefit, once other people have learnt from him. What I consider this particular collaboration distinctive in that it occurred through and beyond the artefacts, and mainly because we spent the entire week reflecting – reflecting on the manufacturing process and its implications on the wellbeing of the artisan producers and the community.

6.8.1 Other consequences

As consequence of the meeting with community leaders (Section 6.7.4), some immediate actions were taken. In time, some of the ideas resonated and the cooperative tried to move them forward. About one and a half years after the field research, the president of the producers' association contacted me to say that they were putting forward the ideas discussed at the meeting, and organizing a cooperative for the development of local rubber products. When I returned to Acre again, in 2013, I met him, and he updated me on the setting up of a small industry to produce shoe soles, a idea that they had taken from the meeting. Currently I do not have any more details about the progress of this enterprise, except that there were, unfortunately, changes in the context that may have affected its continuity, such as dispersion of the group due to political changes, deaths and moves to other cities.

Nazaré stopped producing shoes. I heard that she moved from the village to her family's house in the rainforest and also that she had problems with her production, which was attacked by mould due to the lack of vulcanizing mix.

Most of the producers suffer from the effects of fungus in the production of FSA at some point, and this is related to both the recipe and the conditions in which it is produced. The lack of vulcanizing chemicals is the main problem, as the final material becomes vulnerable and unstable (Chapter 2, Section 2.2.1). This is one of the challenges of the production of FSA and rubber artefacts, exacerbated by the lack of communication with the laboratory and other suppliers. I have been working with the LATEQ laboratory and other local stakeholders to facilitate the supply of this ingredient to the artisan producers through the community cooperative. The idea is also to provide them with contacts to other laboratories that can sell this material to them direct, with no middlemen involved. This problem demonstrates that social innovation is a process that depends on continued actions, shared responsibilities and support until the enterprise becomes solidly established.

6.9 Findings and summary

The process and resultant events of the interaction between the designer, the artisan producers and their communities are difficult to record as they are organic in nature. Chapter 5 postulated the reflective methodology as a metatheory to be applied to collaborations between designers and artisan producers, their communities and the extended network that are part of a project. The reflective methodology led the organization of the myriad forms of content and the reflections resulting from the field research, unravelling the complex aspects involved. This post-rationalization of the case studies also added insights not previously observed.

6.9.1 Outcomes of the field research

The practical collaboration worked well. By preparing and proposing the cutting tools – applied artefacts – I became more than just an observer of their routines; the experience brought a sense of mutual learning and peer collaboration. As result, we were able to share our specific methods of working with the same material and amalgamate them, combining independent and integrated artefacts to produce hybrid artefacts. By collaborating on the artefacts, we also could share our cultural backgrounds and experiences with the material, discussing a range of ideas and possibilities. In this case study, crafts proved to be a strategy for individual and collective empowerment, while technological innovation catalyzed creative endeavour. Design came into place to support this process. This led to consequences that I could follow by my continued relationship with the artisan producers and eventually with some of the community leaders.

As a boundary object, the rubber was seen as a pivotal element that connected different practices, networks and communities throughout the rainforest. This is a meaningful understanding of the analysis of the complexity of social innovation and sustainability of the rubber communities, which can also be applied to other contexts of collaboration through artefacts.

The reflections that resulted during collaboration were annotated by me and then checked by the artisan producers. The result was an important tool that served to foster a metadesign process with both the artisans and the other people in the

community, as by using the points listed, we could reflect on new strategies to deal with current challenges. In this way, the dialogical and collaborative process through the artefacts became extended to other people, who reflected together on the sustainability of the rubber tappers in that region of the Amazon rainforest.

Thus the importance of localism to social and environmental sustainability became evident. This was demonstrated in a meeting by the group's recognition of the importance of increasing local demand for rubber through supporting local crafts. They were concerned not just about the socio-economic aspect, but also about its impact on the natural environment of the rainforest; if they could generate employability, the younger generation might become more interested in continuing productive conservancy in the rainforest. From this, the rubber handcraft was highlighted, acquiring further importance for the community. The agenda that had arisen from my field diary was an important tool to pinpoint relevant aspects to be tackled in future actions with those of the artisan producers who were in the continued collaboration; it served to summarize, review and analyse the complexity and challenges of the context during and after the collaboration.

For instance, the enhancement of skills was exemplified through personal and socio-economic changes experienced by Araújo. His achievements also exemplify how social innovation can take place through the assimilation of new methods and their transformation through creative integration. He developed the ideas generated by our collaboration, and later integrated some of them into his work. While the generation of capabilities was seen as a possibility, the conclusion reached is that although the

designer can contribute to the enhancement of capabilities, this process fundamentally depends on individual effort, multiple interactions and everyone's proactive engagement in learning, doing and sharing.

In this process I observed the quality of the relationships. This is a determinant for the perception of the outcomes of the collaboration, and fundamental to a continued practice. In my interview with Araújo and Delcilene, for example, it became very clear that the meaning of collaboration extends beyond the artefacts, being intrinsically related to a sense of trust and friendship.

6.9.2 Outcomes of the use of the reflective methodology

The reflective methodology guided the narrative and analysis of the collaborative process not in a conventional chronological way, but by encouraging reflection of the interaction from different perspectives. In this way, the methodology encouraged a more holistic perspective of the context and the collaboration, encouraging valuable insights to emerge.

Through the reflective methodology, the complexity and tension of social innovation and sustainability come to light through the different categories in the analysis. For example, the turning points category exposed a situation in which these tensions became evident, which might not have occurred through other methods of analysis based solely on collaboration through the artefact.

Important findings have arisen from the general outcomes of the application of the reflective methodology; these could potentially be transferred to other contexts of collaboration between designer and artisan producers, with beneficial results. There were also important insights that emerged through the documentation of the collaborative process within the community – insights specific to a particular context and interaction, that cannot be generalized.

My role as a designer interacting directly with this community stopped at that point, as I did not have the chance to return to this particular community. Nonetheless, our collaboration and actions have continued to date, with prospects for future projects. This process of collaboration added experience and knowledge that enhanced my own capabilities, which later enabled me to work on consultancies involving local communities, especially from the Amazon rainforest.

In this chapter I used the reflective methodology to locate some key consequences of the interaction between designer and artisan producer. The reflective methodology facilitated the identification of the short-, medium- and long-term outcomes and challenges of the process. Through describing this process, this chapter demonstrated how the articulation of the research questions and the methodology changed and evolved through the writing process. By applying the methodology to the field research I was able to access a deep understanding and a more complete documentation of the context and process of collaboration during my field research. In a reciprocal process, this case study informed the reflective methodology. This dialogue contributed, helping me improve and clarify the methodology before I

finalized it. The following chapter looks at Case Study 2, which addresses a design consultancy that arose from this experience.

7 Reflective methodology applied to design management

‘This kind of project is very important for us. The rubber tappers need to keep populating the rainforest. In this way we protect it and our communities from woodcutters and cattle farmers. If we are able to keep living from the rainforest resources, we look after it and preserve it together’ Mr Raimundo (Field diary, 2012).



Figure 7.1: A rubber tapper looks through his window.

This chapter explores the application of the reflective methodology on a design management project. The case study encompasses my experience as a design consultant leading the implementation of a project of social innovation for sustainability. Case Study 2 is about the assimilation of the new method of producing coloured rubber by a rubber-tapping community in the depth of the Amazon rainforest as one more alternative for local production. Led by the reflective methodology, a narrative about socio-economic and environmental issues emerges through the design practice. The management of this process occurred alongside other tasks, multiple stakeholders and agendas. This case study provides extensive content that informs the community context, and promotes discussion about the design practice and project of social innovation. It illustrates that social innovation is not reducible to immediate outcomes, and that the realization of capabilities is also about collective choices. In turn, this case study tests the application of the reflective methodology in professional practice.

7.1 Introduction

In 2012 I was invited by Sky Rainforest Rescue (SRR) to develop a jewellery collection made of coloured rubber FSA produced in the Amazon rainforest for their 2013 environmental campaign.³⁶ Sky Rainforest Rescue (SRR) is an alliance between Sky

³⁶ Sky Rainforest Rescue (SRR) campaign aimed to save one billion trees in the Amazon rainforest. The project was extensively publicized through a short film, plus newspapers, magazines, blogs and websites.

Broadband and WWF-UK³⁷, which supports local communities and projects in the preservation of large areas of the rainforest. The project included the participation of a number of stakeholders from UK and Brazil.

My role as a design consultant extended from writing the project to its realization. According to Kathryn Best (2006), design management encompasses the view that design strategies, processes and implementation go hand in hand with the organizational and entrepreneurial side of a project. This includes the relationship, integration and coalition with many stakeholders. This position enables the designer to deal with social, political, environmental and technological issues (Best, 2006, 29). This intersection of different activities in design with business (Best, 2006), when combined with a holistic understanding of context and process, may equip the professional to deal with the wide range of roles inherent within the scope of social change and sustainability. This amalgamation of design and management reinstates the notion of Chapter 4 of design-in-practice and design-as-practice, in which the designer takes charge of multiple activities and needs to collaborate and negotiate with multiple stakeholder agendas. This process has consequences that go beyond time and place. Within this complexity, Manzini (2015: 54) suggests that 'there is no longer a separation between the design and management stages of a project' and that the design activity is fundamentally a research activity. In this way, designing for social change represents a broader scope of design that brings to the definition of design and the designer the different responsibilities and the complexity implied by design for social innovation and social entrepreneurship.

³⁷ Sky Rainforest Rescue. Available at: <https://rainforestrescue.sky.com/our-campaign>. Accessed on: 5 Jun 2013.

Through my professional engagement in the opportunity of the Case Study 2, I observed that in this design consultancy were interwoven three levels of practice: the organizational, the participatory and the authorial. The organizational comprised the management of the project, the participatory regarded the collaborative work with the community and other stakeholders, and the authorial encompassed the design of the jewellery collection. Thereby, the management of a complex project puts the design consultant into a political position of intermediate and negotiable agendas in the network.

This chapter applies the reflective methodology to this project of design management retrospectively, in order to analyse the process and interaction within the community context. By doing this, the case study informs the use of the reflective methodology in the professional practice of design for social change.

7.2 Fundamentals of the project

The immediate objective of the project was to develop products using the wild rubber produced by local communities in the Amazon rainforest. Through the jewellery collection made of the coloured rubber FSA produced by a local community in the rainforest, the campaign would bring attention to SRR actions in the region, where, in order to preserve large areas of rainforest, one of the main strategies has been to support productive conservation in the forest. Through this project, the community would learn the method of production of the coloured rubber FSA. The FSA thus

produced would be purchased by the project. The main scope of the consultancy involved the production of material with rubber-tapping families who were part of the scheme of productive conservation in rainforest areas supported by SRR. In addition, for the production of the jewellery, an extensive research was conducted into materials and processes socially and ecologically sourced and operated.

Nonetheless, the main objective was to promote social innovation by providing one more alternative for the productive conservation of the wild rubber, to establish a demand for the material and to support the continuation of the production to other clients and projects. Thus, the overall intention was also to transfer the technology of FSA production to the community, whose know-how could then serve as one more option of income generation within the model of productive conservation.

7.2.1 Preparation for field work

Prior to my travel to the Amazon rainforest, there were three months of preparation, including design meetings and the alignment of the stakeholders' agendas. The itinerary and the logistics of production were planned in this phase, as well as the formation of a team in Brazil. This comprised people working on the ground to support me during the days in the Amazon, and artisans who would test the ideas for the jewellery collection. This phase also included meetings with the ambassador of the campaign, actress Lily Cole,³⁸ who collaborated in the conceptualization and creation of the jewellery collection.³⁹

³⁸ Cole is a humanitarian and environmental activist who has advocated an ethical fashion that embeds social and environmental values in the production chain. She has campaigned for the Environmental Justice Foundation

7.2.2 Methods and tools

The approach to this community was also open and dialogical, during which I participated in the community's life for two weeks. As will be further described, the division of labour and responsibilities were shared among members of the group. In contrast to the other situation, we had targets with our client. Nonetheless, we still had time to explore the new material through crafts. In this community, I also had the role of teaching and discussing the specifics of the project, such as the thickness of the rubber and the colour patterns.

During my immersion in the community context, I made systematic use of a field diary and notes from conversations. In addition, extensive audio-visual material, such as videos, photos and audio-recorders, was produced by me and the project team. Interviews were made with rubber tappers and artisans as part of the project, which resulted in several publications, which I also make use of here as reference I also used cultural probes, by sharing photos with community members. Some of the artisan producers also took notes about the new methods and the rubber production. The reflective process occurred through open conversations, when we shared feedback on the activities. In 2014 and 2015 I added to the material by interviewing some project stakeholders who have worked directly with the community.

defending more sustainable cotton productions in India, and is the founder of the knitwear company North Pole, whose products are handmade by traditional artisans in the UK.

³⁹ <https://rainforestrescue.sky.com/our-campaign/news-and-blogs/news/lily-cole-launches-limited-edition-jewellery-sky-rainforest-rescue> Accessed on: 05 June 2013.

The reflective methodology was also applied as a post-rationalization of this fieldwork. While the application on the first fieldwork played an active part in the design of the methodology, in this chapter it flowed as an established method. This application also helped to reassess the process and organize the extensive amount of materials. Several insights emerged from this process.

7.2.3 Ethical considerations

Ethical considerations were taken seriously by both WWF/SKY team and me. We had several discussions about the impact of the project before final definitions; some concerns were about being careful to avoid creating false expectations or economic imbalance in the community. The team working in the ground was particularly worried about defining values that were feasible for future production with other clients. The Brazilian team working in Acre also visited the community beforehand to invite them to participate and make arrangements. Finally, in the first conversation we had when I arrived in the community, I explained the project again in order to resolve any doubts.

As part of the SRR project, there was a contract, in simple and clear Portuguese, signed by community leaders and agreed with the group. Two community leaders signed it. There was also a form of ethical consent for the use of images, text, audios, videos and other materials. Contents produced by me and by other professionals during the project were largely publicized as part of the project. A short film was part of the project. Participation in that film, or indeed in any other activity, was not obligatory.

7.2.4 Economic concerns

Payments to the producers and other community members supporting the activities were also made during the project. Extensive consideration about the amounts to be paid had previously been discussed with professionals on the ground and with key stakeholders of the project. As we were going to teach the producers about a new material, they did not have a price reference for that; so we discussed this in comparison with other kinds of rubber and in relation to its viability for future clients. Our concern was to benefit community without creating imbalance

Because I was in charge of the collaborative process with the community, I had an important influence on the socio-economic and ecological decisions during the project. Whilst this might not be the usual role of the designer, dealing with budgets and costs is normal practice in the profession; it is part of the designer's role to discuss the economic parameters, which members of the profession are well placed to do in an informed and potentially sensitive manner, being knowledgeable of the processes involved in the production time, plus the skills, the costs, the creation of final product, and importantly, the reality of the producers' context.

7.3 Contextualization

The project was developed with the community of *Parque das Ciganas*, in the north of the state of Acre, Brazil (Figure 7.2) This rubber-tapping community is two hours by car from the nearest city, Feijó, and has a population of about forty people. One of the reasons for working with them was the proximity to the city, in relation to other

communities. Another of the reasons for inviting this community to participate in the project was their experience with a similar type of rubber, FDL (Chapter 2), and their commitment to previous projects. They were first introduced to the coloured rubber FSA through this project.

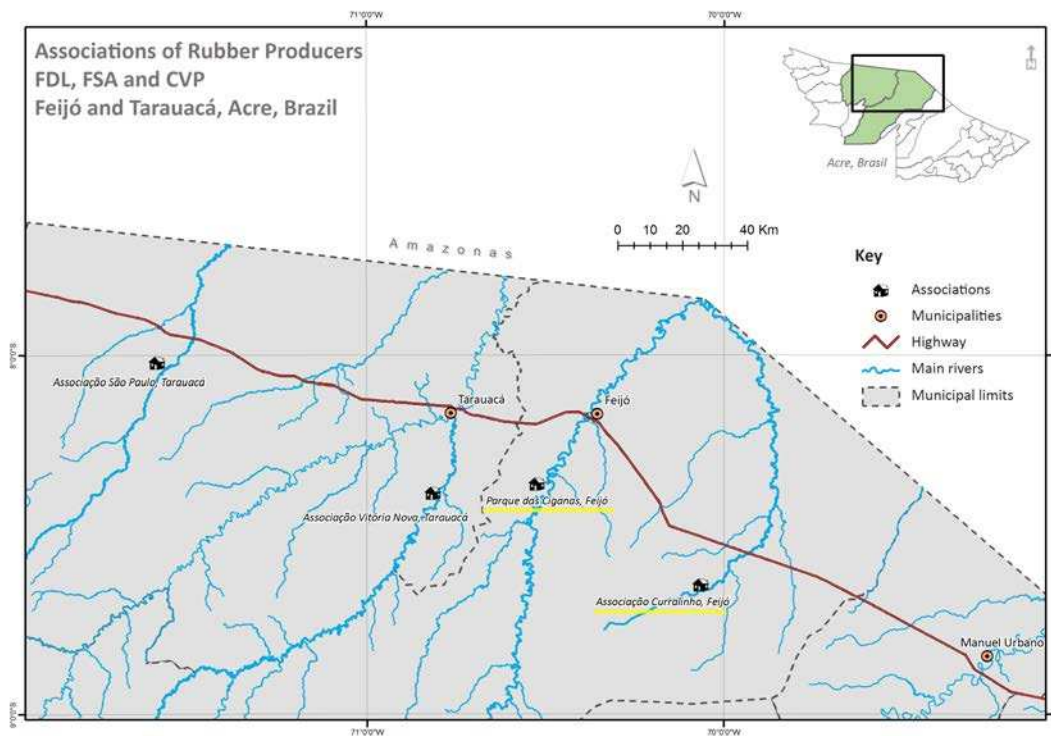


Figure 7.2: Location of *Parque das Ciganas*, Brazil. Map showing the main areas of rubber production in the north of Acre state. The communities underlined in yellow are the producers of coloured rubber FSA: *Parque das Ciganas* and *Curralinho* (this map was kindly provided by the WWF office in Acre, Brazil, and has been slightly adapted and translated).

The families of this community live dispersed in the depths of the rainforest. Their houses are separated by from each other by an hour walking. Their lifestyle resembles small-scale farmers whose houses are surrounded by the rainforest. Phone and internet signals, as well as mains electricity, are limited. The houses are traditionally built of timber with only a few rooms, or just one. They rely on subsistence farming

and on consuming resources from the rainforest, such as water, fruit, roots, seeds, nuts and animals. Economically, the main product is still the rubber harvested in the model of the productive conservation, but recently there has also been some growth in cattle farming. The main meeting points are the biggest house of the community, along with a church where the families gather weekly. In the big house there is an electricity generator powering electrical equipment such as a fridge, lights and television for events and reunions. The house belongs to the oldest couple of the community, who are the parents of half the adults of the community, the other half being their respective partners-cum-relatives. In terms of division of labour, as already described previously (Chapters 4 and 6), the men are mainly responsible for activities in the rainforest and the women for activities in and near the house, working on the family subsistence plots consisting of small plantations and domestic animals, caring for children and the house. However this division is not strict, as both men and women work together on plantations and many other activities in the rainforest; and both may generate income for the house as well, depending on the opportunities, structure and facilities near them. The social rules in this particular community were partly regulated by the church, attended by the majority of community members. Directly and indirectly, it appeared to prevent problems of alcohol, smoking and drugs, whose use were not accepted in this environment. This rubber-tapper community is also organized as a cooperative in order to provide mutual support in the production and logistics of the material.

Unlike the artisan producers of *Assis Brasil* (Chapter 6, Case Study 1), the community of *Parque das Ciganas* did not know how to make FSA. They were, however, already

producers of FDL, using a technology similar to that used for industrial applications.

The participants of the project were recruited by WWF-Brazil, whose team in Acre had been in direct contact with the communities of the region. Thirteen participants, four women and nine men all over sixteen years of age, took part in the training and production. But entire families, including children and old people, actually took part in some way in the project, participating in the events and supporting our stay with them; for example, three more women worked on preparing food for the whole group. A chemistry technician from the LATEQ/UnB, Vanda Ferreira, mentored the training and the rubber production with me. She had been working on the Tecbor project since its beginning and has trained more than thirty rubber-tapper communities.

Panel 7.1: The community context



Figures 7.3: Community context of *Parque das Ciganas*, November, 2012.

7.3.1 Reasons and motivations for participation



Figure 7.4: Producers at the *Parque das Ciganas* production unit, 2012.

Economic reasons appear to have been the main driver for the community's participation in this project. The community members became enthusiastic about it, with women and young adults keen on learning how to make the coloured rubber and create the handcraft artefacts. It has been arranged that a minimum of four hundred coloured rubber sheets (FSA) would be produced by the community and purchased by the project. This amount was set up as a reasonable target to be produced during the project, which in total lasted four weeks – with a break of one week, during which most of them kept producing. As part of the normal daily routine, the pace of production is slower – but in this case, we were all working together on rubber production specifically, and as a result, the amount of rubber produced exceeded the projected amount.

7.3.2 Content and learning process

The initial target of the project was to teach the local producers how to manufacture FSA and to work with them on the production of rubber sheets specially made for the production of the jewellery. The training included giving the community the recipe for the production of the coloured rubber sheets; colour mixtures, testing and producing a variety of colours and the colours previously defined for the collection; control of the thickness of the rubber sheets; analysis of the quality of the material; and textures. Additionally, I aimed to stimulate the creativity of participants through teaching them how to manufacture rubber handcrafts through the method of the integrated artefact.

7.3.3 Activities' schedule

The training and production of the rubber sheets would occur in a period of four weeks (see table below). The community was consulted in advance as to who should make the decisions and the arrangements such as the best location for the project to happen and how they would organize themselves during the capacitation process. Some members did not directly participate in this, so that they could support the group in other ways, for example taking care of the children and cooking.

The work with the community lasted about one month, during which I spent two consecutive weeks working directly with the artisan producers in training them and producing FSA.

Table 7.1: Schedule of the days working with the community in the Amazon rainforest

	1 st week	2 nd week	3 rd week	4 th week	Last day of the 4 th week
Professionals working within community	Flavia Amadeu and Vanda Ferreira	Ferreira		Amadeu	Amadeu Lily Cole Pastore Filming crew WWF-Brazil-Acre SRR team
Activities	Training	Monitoring production	Production	Production, quality control, identification of problems, payments, conclusion of the work.	Film production. Filming the FSA process with the SRR's ambassador. Celebration!

The table above shows the schedule of the project drawn up with the community. I spent the first week working with Vanda and returned to the community after two weeks in order to work with them on the final production, quality control and transport of the production. The visit by Lily Cole and other stakeholders of the project from UK and Brazil marked the last day of the fourth week, in which we filmed the production process and celebrated the partnership with the community.⁴⁰ See the complete timeline in the appendices.

⁴⁰ Lily Cole launches limited-edition jewellery for Sky Rainforest Rescue (2013). Available at: https://www.youtube.com/watch?v=8_swQVzH_44&feature=youtu.be Published: 3 Jun 2013; accessed 26 February 2016.



Figure 7.5: Producers preparing the production unit for work.
Figure 7.6: Vanda Ferreira (wearing red cap) teaching the FSA process, 2012.

7.4 Reflecting through the six perspectives

The perspectives of analysis encourage the examination of the context and the interactions with community and amongst the network of relations involved. Through applying the reflective methodology, detailed narratives are formed and provide content for analysis. By doing this, I bring in my own accounts about the experience, which is also informed by publications, interviews and other materials produced. This documentation and observations may perhaps provide further nuances of the collaborative process and of the process of social innovation. Here I look at the process, the relationships and the roles that I, as a design consultant, assumed in this project.

7.5 Constellation

Figure 7.7 shows the main stakeholders involved in the project, FSA being the core from which the network expands. In this illustration, I also placed myself as design consultant, to give a hint of my roles within this project, interacting with the

community through the intermediation of the rubber and also negotiating with and managing diverse stakeholders. Lastly, the constellation displays the power relations within the project.

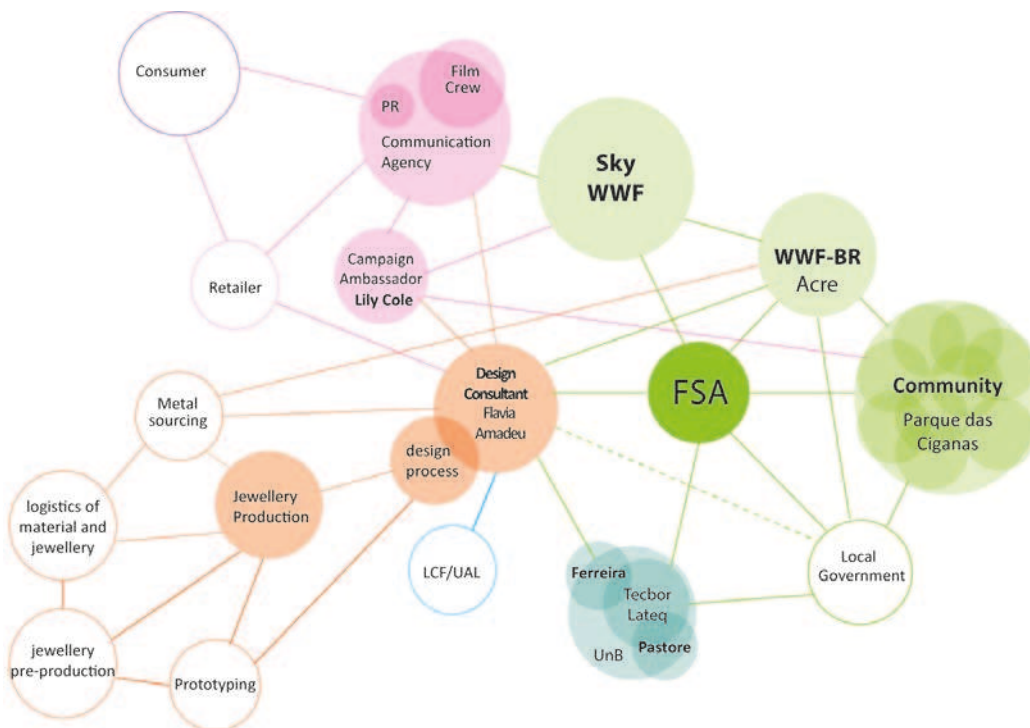


Figure 7.7: Minimum constellation of the project

The constellation also shows that issues of differences existed, even if in a subtle way, hence difficult to address. Although we worked collaboratively, a number of community members who were not rubber tappers wanted to participate in the course. But the participants had been selected beforehand by the WWF team, as people involved with rubber production and having the structure to produce. This put us in the awkward position of having to determine the right of certain people to participate and maybe earn some extra income even if it was only temporary. In the

end, some community members, both participants and non-participants, asked us for some money and things that had no relation with the project; we delicately had to make it clear that we were working within the project, just as they were. There is still a paternalistic culture in Brazil in which people rely on government and charity handouts. This creates an unmistakable difference in class, even though on the surface the sense of non-hierarchy may prevail. Marianne Gronomeyer (2000:18-39) questions the idea of 'help', which according to her has been distorted throughout history, becoming a pretext for political and economic coercion (2000: 35). Training in a new method for social innovation would be in a category related to a developmental politics of non-governmental organizations; in this way, the dependence of the other is transitory (2000: 35) as social needs could be met (Max-Neef, 2005) through the development and realization of capabilities (Sen, 1999). Gronomeyer argues, however, that even this kind of help sees capitalist development as a way of making a life, and questions whether training and qualification would destroy modes of subsistence and the capacity of communities to organize themselves. In 2016 the SRR funding of projects in the area comes to an end, and this leaves the question of how these communities will be able to continue the productive conservation of rubber and other projects without such a powerful support. Evidence shows that coalitions involved in this project have been working in the last six years supporting communities through social innovation by also trying to construct perspectives for autonomy and continuity – for example, by transferring management skills the cooperatives can deal direct with the clients (Nascimento, 2014). The approach to the social innovation of the rubber, although changing the process, does not change the essence of the productive

conservation. Instead, it aims to contribute to a possible sustainability of the local livelihood and wellbeing. These issues however, create a tension.

7.5.1 Diversity and Conviviality

The families welcomed us and we gathered together to reorganize the initial plan with community members. It was a good beginning, as we had not had any direct communication beforehand. After personal introductions, together we discussed and planned the actions and responsibilities for the coming days of training and production. The group seemed comfortable, enthusiastic and empowered as they became talkative, naturally participating in decision-making for the following working days. They suggested the division of labour according to gender and personal ability; for example, the men would organize the production unit where we would all work during the training. So they needed to repair the pressing rolls, prepare the hangers to cater for a larger number of rubber sheets, bring an extra table and so on. They also were responsible for collecting the latex in the rainforest. The women would clean tools and prepare materials for the arrival of the latex. Both men and women would work on the production of the rubber sheets. Some people in the community volunteered to support the group during the training by taking care of the children, cooking or helping to re-organize the working space, instead of directly participating in the production of rubber. Ferreira was the main instructor teaching the manufacture of the coloured rubber sheets, while I focused more on the dyes, thickness and quality control although participating in the whole process.

The activities in the community unfolded in a participatory and collaborative way, in which we shared roles, responsibilities and tried to cooperate with each other. Nonetheless there were moments when Vanda and I needed to be sensitive to maintain the collaborative mood among the group. In her interview for this research, Ferreira (2013) remembered that we needed to be aware of the need to maintain the friendly and relaxed atmosphere for the whole time. So we made sure that everybody was equally recognized for his or her work. By sharing responsibilities and leadership, it was possible to promote a non-hierarchical space. One of the strategies to create this space was to circulate roles and responsibilities, so each day a couple of the participants volunteered to be in charge of production. They kept notes on the amount of latex collected and the rubber produced by each participant, among other duties such as taking note of the colour mixes, so that the same colour could be reproduced later on. When neither Ferreira nor I were in the community, the volunteer participants kept working and taking notes. Most of the participants, apart from the ones that preferred not to, took a turn at supervising. In this way, the community members kept track of production.

We also needed to keep notes of the amount of latex collected by each rubber tapper, as payment for the rubber sheets was proportional to the individual production. Some also took note of the whole production and process every day, revealing their interest in the activity. In this way, a sense of shared responsibility developed in which everyone supported each other even when not in the role of keeping the production organized. Sharing responsibilities was an important aspect of the practice of managing production and quality control. This way of working could be carried out by

them in their production practices and capabilities of administrating their production. It also helped us to control and confirm the total amounts produced at the end of the project, thus avoiding any misunderstanding about payment.

Panel 7.2: Workshop and rubber production (2012).



Children of all ages made the community a lively place. Besides their natural curiosity, the colourful hangers of rubber attracted them, so they were always around and wanting to help. They were not allowed to participate in the rubber production, but when out of school they were always around, outside the production unit, attentively watching us working. Although we advised the parents to not allow children to work in the production, their involvement in the activities of the community are very much part of their education within their cultural perspectives (WWF-UK, 2014). So on the last day of the project, the children helped us to collect the rubber sheets from the hangers. The older children, who were about ten years old, happily helped with quality

control, counting the sheets and separating the good ones from the substandard.

Allowing the children to help was more than just a way of entertaining them; as they normally learn the activities of the productive conservation with their parents, to participate in this process in some way appeared to have given them a sense of inclusion and belonging attached to the activity of their parents. Some of the children also developed their own artefacts with rubber, such as bracelets and elements of nature (trees and flowers) with their mothers.

Again, the good relationships between us enabled a sense of collaboration and solidarity during the interaction with community, including participants and non-participants of the training, Ferreira, and other stakeholders who supported us with transport and logistics inside and outside the rainforest. Mutual support, trust, understanding and friendship among the diverse range of people involved directly and indirectly in the project were determinant to the accomplishment of the targets established by the client and of the perception of a positive interaction.

7.5.2 Narratives

Besides being the artefact of mediation that enabled the collaboration to take place between artisan producers and external partners such as myself, rubber is above all a boundary object of socio-economic, political and environmental significance (Chapter 2). Rubber is part of the historical formation of the state of Acre, being part of the culture and memory of the population, which articulates its significance through oral history.

Oral history was also present in the conversations in this community. Mr Antonio and Mrs Rita were the elder couple of the community; they were the parents of nine children, eight of them still living in the community with their families (most of whom were participating in the training). The couple did not participate in the activities but supported the families and us in it. Mr Antonio, who has been a rubber tapper all his life, shared with me his story about his involvement with the rubber-tapping cause in the 1970s, led by Chico Mendes. He showed me a rare leaflet of a rubber-tapping conference in which he had participated for the defence of the rainforest (Figure 7.8). This was an important moment in the history of Brazil, of the Amazon rainforest and its communities, when the scheme of productive conservation became recognized as a result of the small producer's political union (Chapter 2).



Figure 7.8: Leaflet of the National Union of the Rubber Tappers against deforestation and in defence of the producers from the rainforest; a historic moment experienced by Mr Antonio in the 1970s.

Mrs Rita also told me about the migration of her parents from the northeast Brazil to the state of Acre in the second rubber cycle during the Second World War. The history of Mr Antonio and Mrs Rita are among many others that make evident the meaning of the rubber as a boundary object which defines a local identity shared among the diverse generations and across communities of the rainforest.

Both in *Parque das Ciganas* and *Assis Brasil* (Chapter 6), the locals clearly demonstrated their intention to keep their livelihoods going in the rainforest. One of the common concerns between these two communities was the lack of interest of young adults in the rubber industry. Indeed, the traditional process has not been economically viable, quite apart from the physical effort it requires (see Chapter 4). So embracing other methods of production means contemplating the possibility of continuing their history and culture in the rainforest, which ideally should increase the family's income as well. Mrs Andréia was an active participant of the project for twenty-seven years. In an interview to Sky Rainforest Rescue (Sky and WWF, 2013), she declared her wish to keep raising her child in the rainforest:

I want to live in the rainforest for the rest of my life and I want my children to be able to do the same, which is why it is so important that we can make a living from it. The conservation of the Amazon is very important and I want people all over the world to know about this.

Mrs Andréia said in the interview that her husband had to travel many hours to work in farms. However, since working with the new production processes, FDL and now FSA, they could make a better life for themselves in the community (Sky and WWF, 2013). Her narrative also makes evident the success of the inclusion of women in the work with rubber. Because the production units are located alongside their homes and

the working conditions are better in this system, women are able to work on rubber production as well, increasing the family income.

7.5.3 Turning points

The perspective of turning points brings insightful moments of transformation or dialogue through which new learning and change become apparent. As shown in the schedule of the project (Section 7.3.3), I left after the first week of training and production. Returning to *Parque das Ciganas* two weeks later was a great experience for me, as the first feedback from the community to the project brought the sense of having left a seed that was then germinating, as illustrated below:

Personally, it was a beautiful moment to have many of them waiting for me on the riverbank. Access to the community was only by boat, as it had rained a lot on the previous days. On the way to the community's spot, Mrs Iris updated me about the production as in the following extract and photo:



On the boat, Mrs Iris told me about the production and the training with Vanda. She was happy with the capacitation. She and her husband had worked after the training with Vanda, producing more rubber sheets and testing colours, including the white rubber, which is very difficult to achieve. She could not wait to show them to me (Field diary, 2012).

Figure 7.9: Iris shows me the rubber sheets that she and her husband produced after the training, 2012.

The training resulted in the manufacture of a large amount of rubber sheet in excess of the minimum order. That was partly produced collectively and partly produced by the couples in their production unit. They looked satisfied with the training course and the

final results. Moreover, the women had developed a range of rubber artefacts, and they taught their new skills to other women that had not participated in the training. Both the assimilation of the new method and the creative transformation of the material – technological and creative integration – are pivotal in social innovation.

Another very important moment occurred when I arrived at the big house and we all gathered together to exchange our photos – both those that I took during my previous stay and the ones they took when I was not there. These photographs acted as cultural probes, further enriching the comprehension of the community dynamics, the personalities and the involvement of the participants in learning a new method of production. Importantly, it was an opportunity to share moments that were special to us during the project and to reconnect before carrying on with the work the next day. As a way of following the progress of the production in the course of the two weeks whilst I was to be away from the community, I had asked them to photograph and take notes of the rest of the training and the production. Mrs Andréia had recorded some interesting moments on her digital camera while we were away from the community, and her photos were shown on the TV (Figure 7.10). This, too, was a fantastic moment of sharing impressions and celebrating; the photos revealed how engaged everyone was in the activity and the different phases of the production process. Their commitment to the production became noticeable in the pictures. The pictures also revealed more about their personalities; for example, a woman who was normally very shy and quiet appeared laughing and more relaxed in the pictures. This same woman developed a range of rubber artefacts, including a little bag and some bracelets. This is interesting because during the activities it was difficult to see her response to the new

methods. But with the photos allied to the artefacts she made, it was possible to learn more about her and her involvement in the project.



Figure 7.10: Rubber tapper and the production. Photo taken by the community, December 2012.

7.5.4 Technological integration

The rubber tappers and their wives perfected the method of making FSA, and after their three intensive weeks of capacitation and training produced more than the initial order of four hundred rubber sheets, the amount agreed with the client. Some people had worked during the weekends as well, and the men made great efforts by walking further into the forest in order to collect as much latex as they could on a daily basis for the production. Ferreira, who has extended experience with rubber communities, reported her impression of the interaction with this community:

I was well surprised with the commitment of the rubber tappers to collect as much latex they could in order to supply the

production; and with the dedication of the women to carefully make the rubber, with which they began to test their own ideas (Ferreira, 2014).

However, as part of the technological appropriation, the first challenges began to emerge. Unexpectedly, a fungus attacked a great part of the production of the rubber sheets, but as the total production exceeded the order, the losses did not affect the realization of the jewellery collection and the use of the material in exhibitions and events by the client. Nor did it affect the income for the community, as all the material produced, even the fungus-infested sheets were purchased.

Later we analysed the rubber with Pastore, who visited the community for the final celebration, and identified some probable causes that instigated the proliferation of the mould. One factor could be related to the quality of the water used to dilute the latex in the making of the rubber sheets, which, coming from the river, carried a number of live organisms. Another factor was that the production unit had been overloaded with rubber sheets, increasing the temperature of the hot tropical air, although we had opened doors and windows to allow ventilation during the drying of the rubber. In this case, the lack of proper ventilation in the production unit had not been fully anticipated by us, who were responsible for the training and production.

We cleaned all the rubber sheets and carried out a quality control check, that included the pieces with fungus, the uniformity of the colour and of the surface of the rubber sheets. I advised the teams about how to minimize losses for future orders and how to store and pack the material to send to clients. Even the discarded rubber was bought

by the project, as the mould damage was unexpected and part of the learning process.

The problems affecting the quality of the material were resolved, and the rubber tappers appear to have become more confident and enthusiastic about the production.

Challenges come to light through experience. All this is part of the practice and knowledge acquired by producing the material in each location. For example, I have noticed that problems that affect the quality of the rubber sheets, such as elasticity, resistance, resilience, stability and texture, generally emerge after the first training bout in each community; the producers are still learning and adapting to the new method and material. Other difficulties not foreseen by the stakeholders and by the artisan producers related not just to the new method but also to the logistics, and to the socio-economic and political aspects that can evolve and affect production. Thus it is important that social innovation projects are medium- to long-term partnerships instead of short-term actions and immediate events. It is in the medium to long term that it is possible to promote individual and collective capabilities.

Panel 7.3: Producers and production



7.5.5 Creative integration

The manufacture of rubber handcrafts inspired the creative integration of the material in the community, especially in the women. Having taught the technique of the integrated artefact during my first week within the community, when I returned two weeks later the women surprised me with their integrated artefacts; they had developed a range of items such as little bags, decorative flowers, armbands, rings and flip-flops. They also taught other women from the community, who joined them in the making of the artefacts (Panel 7.4).

Mrs Aninha (Figure 7.15) did not participate in the capacitation as she was looking after the children while the other mothers were on the course. However she observed the capacitation as we worked in the production unit that belonged to her family. In the afternoon, after the quality control session, I saw Aninha surrounded by kids. I got nearer and saw she was cutting up the discarded wet rubber and making her own jewellery. The small children observed with curiosity, while the big children joined her in the creative activity (Field diary, 2012).

The women were already thinking about selling them in an annual fair that occurred in the region, and approached me to advise them about prices. When the film crew visited the community the women exhibited their products and sold all of them. I did not intervene in their creative process with the handcrafts at any point, although I made some suggestions and brought them some materials that they could use to cut the rubber and to make earrings and necklaces.

During the rubber production for application in the jewellery collection (Figure 7.24), as independent artefacts (Chapters 6 and 8), we also worked on a series of techniques for the development of integrated and hybrid artefacts. My intention was both to test the material and to encourage the creative development of rubber artefacts by community members. I brought laces and woven patterns with me, which had been produced by Brazilian artisans from other regions (Panel 8.1). The idea was to further experiment with embossing the rubber during the production process, a process that I had tested in the LATEQ laboratory in the past. That would generate a hybrid artefact. We also worked on the integrated artefacts, moulding and sticking the rubber while it solidified (as in Chapter 6). However, handicraft making was not the focus of the project, so we only had time to give an introduction to the techniques.

Panel 7.4: Creative integration and the integrated and hybrid artefacts



Figure 7.12: Teaching the integrated artefact. Figure 7.13: Exploring ideas for the integrated artefact.



Figure 7.14: A nine-year-old boy shows the rubber bracelet he made.



Figure 7.15: Mrs Aninha making bracelets.



Figure 7.16: Rubber bracelets made by Mrs Aninha.

Panel 7.5: Hybrid Artefact – Embossing on rubber

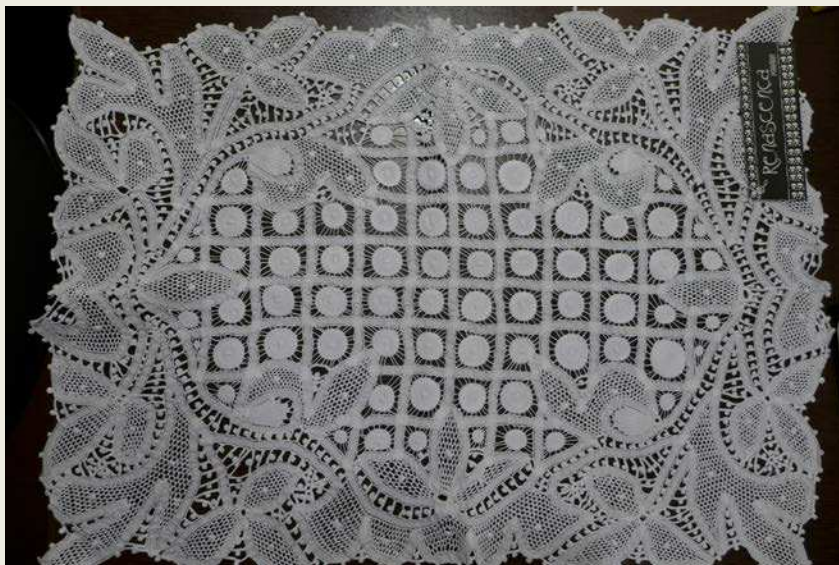


Figure 7.17: Artisanal *Renascença* lace from northeast Brazil.



Figure 7.18: Embossed FSA rubber.

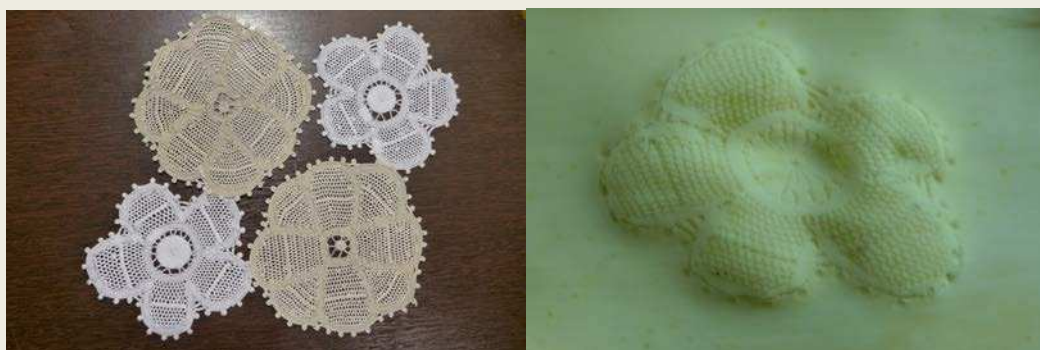


Figure 7.19: *Renascença* laces from northeast Brazil. Figure 7.20: Embossed FSA rubber.

7.6 Resilience and Legacy

The perspectives of resilience and legacy rely on the outcomes and consequences of a project. Rather than being restricted to immediate outcomes, an investigation should ideally be made into how the project unfolded and reverberated throughout a period of time. By looking at the short-, medium- and long-term implications of the projects, it may be possible to perceive whether the activities that were developed in the interaction with the designer and throughout the social innovation project made any contribution to the development and realization of further capabilities related to production, individual and collective wellbeing.

The outcomes of a project such as ours include: financial value; technological value through the transference of the method of production to the community; social capital through the formation of a network of relations with stakeholders committed to the cause of the Amazon rainforest, allowing ongoing coalitions and projects; symbolic capital through a range of publications (WWF-Brazil, 2015; WWF, 2014; Sky and WWF, 2013); and the jewellery collection among others. Cultural capital related to the reinforcement of the traditional activity of producing rubber in the Amazon rainforest and perhaps also to the initial development of a handcraft activity with rubber. Environmental capital can be seen as the reinforcement of the productive conservation of the wild rubber.

7.6.1 Economic and social capital

At the end of the project with the community of *Parque das Ciganas*, the producers and the participants that supported the group during the training days with Ferreira and me were paid. The collective production was calculated according to the amount of latex collected by the men, in addition to the days each person worked. The production of the coloured rubber in addition to their participation in the project provided them with a profit that they can rarely earn in a short period of time. I asked them about their plans to use the money, to which half said they would buy construction material for their houses, while the other half intended to travel to the nearest city to buy non-perishable food and goods to supply their family for a few months.

In addition to gaining an immediate economic return to its members, this community became a producer of FSA. The participants who also learnt the manufacture of rubber artefacts and texturized rubber became potential artisans. The project appealed to young adults and the younger generations, attracting their attention and interest in working with the rubber. This is significant, because the low prices achievable from the old types of rubber, combined with the unpleasant production processes do not encourage youngsters to continue the activities of their parents. The inclusion of women in rubber production is another important aspect that becomes possible as a result of the production method of the rubber sheets. Moreover, by working together with their husband, the work becomes a family enterprise, where one can complement the work of the other.

Their satisfaction with the project, the training and the payment was manifested several times, as in the extract below, which demonstrates their interest in keeping on producing, and participating in future projects:

Flavia, if there is another project to produce FSA, you will invite us to participate, won't you? (Field diary, 2013)

In fact, although the financial incentive was significant in arousing initial interest, the evident satisfaction with the production and the visible interest of the women in the making of the artefacts demonstrated that it was not only for immediate gains that the project was held as successful.



Figure 7.21: Women from *Parque das Ciganas* exhibit their products to visitors, 2012.

7.6.2 Symbolic capital

During the visit to the production unit, we explained the production process to Cole, who tried out the process being tutored by Mrs Andreia and Mrs Iris. Instead of this being seen as a disruption, it seemed to be a rewarding moment for all. The women prepared a little exhibition of the rubber artefacts they had made, and sold them to the guests. All shared a meal prepared by the community and the team from WWF-Brazil. Cole also played football and visited the school. The community members knew Cole was a famous model from the UK, but they did not know her as a celebrity in Brazil, and this might have contributed to making them feel relaxed. The objective of the film was to promote the SKY Rainforest Rescue campaign, aiming to get further donations for the socio-environmental actions in the region by promoting outcomes of the project.



Figure 7.22 and 7.23: Cole visiting the community of *Parque das Ciganas*, 2012.

I observed that the meeting of the other project stakeholders with the community was very important, reinforcing the values of project as the guests got to know the producers and the forest itself. I consider that this final celebration was a way of bringing recognition to the community, thus generating symbolic and social capital.

‘Symbolic capital (Bordieu, 1986) relates to the way that one is valued by others, for example, honour or prestige’ (Fuller and Tian, 288). ‘Symbolic capital’ was in this context the sense of gratitude and mutual recognition between us; there was recognition of the community’s work and a sense of pride. It can also be considered that the jewellery collection, through embedding the meaning of the producers’ work, also served as a way of promoting symbolic capital. This encounter appears to have also strengthened the ties between stakeholders, which generated further dialogues and collaborations between us, both related to SRR funds and independent of it.

7.6.3 The design of the jewellery

The design of the jewellery collection combined coloured rubber with some metals which were certified as recycled and traceable. The jewellery pieces, comprising a set of earrings, ring, necklace and bracelet, were sold out in less than a week from launch. The collection and the campaign for supporting the SRR actions in the Amazon rainforest were successfully promoted through films, reports, website, blogs and magazines. The success of the project, and the intention to continue supporting the production of coloured rubber, encouraged the network of the project to continue the conversation around the sustainability of this and other communities, resulting in additional actions and collaborations.



Figure 7.24: Jewellery collection designed for Sky Rainforest Rescue campaign 2013 in collaboration with Lily Cole. FSA rubber produced by community of *Parque das Ciganas*, Acre, Brazil.

7.7 Celebrity endorsement

Celebrity endorsement was both part of the project and part of its outcome. The involvement of Cole as ambassador of the SRR 2012–2013 and 2013–2014 campaigns used fashion as a channel to discuss the pressing issues of sustainability. Through her image and genuine involvement, she introduced the context of the Amazon rainforest communities to a wider public. She embraced the cause, becoming an activist and social entrepreneur, and developing further initiatives to create opportunities for the rubber-tapping communities including her involvement in the SRR campaign on the 2014 with Veja Shoes and the development of a website about rubber off her own initiative in 2014 (wildrubber.com). The website, shown in Panel 7.6, promotes the history, production context and products made of wild rubber from the Amazon rainforest.

Panel 7.6: Lily Cole and wild rubber

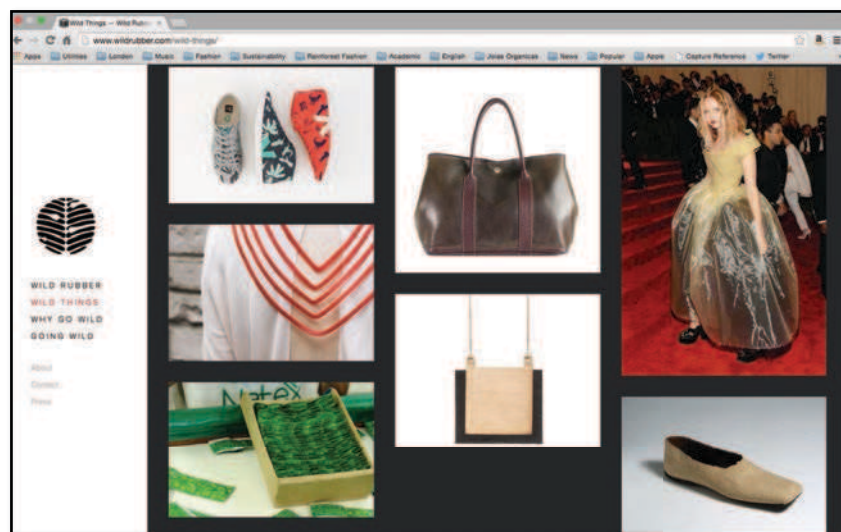


Figure 7.25 and Figure 7.26: Wild Rubber (www.wildrubber.com) has been developed by Cole to promote projects and initiatives with the rubber produced in the Amazon rainforest (Cole, 2014).



Figure 7.27: Lily Cole wears a FSA dress designed by Vivienne Westwood in 2013.
FSA produced by community of *Parque das Ciganas*, Acre, Brazil.

7.7.1 Multiplying social innovation

As another outcome of the project, the social capital of the network committed to further support the production of FSA. In a collaborative partnership, we presented the proposal to another community, which accepted the order even though they had to learn how to produce FSA. The rubber tapper artisan Araújo (Chapter 5) was contracted to instruct the *Curralinho* community, while I advised on the process carried out through the WWF-Brasil office in Acre. The fact that the stakeholders were in tune and had learnt with the experience in *Parque das Ciganas* facilitated this process.

There were also challenges in the implementation of the FSA production method in the *Curralinho* community, which emerged after the first training programme, and was concerned with quality, thickness and some practical issues relating to logistics and

bureaucracies. So a second training programme was realised in 2014 in a partnership between LATEQ, WWF and a new client, MUMO.

The *Curralinho* community continues the production of FSA. They also produce tons of FDL per year, to fulfil constant industrial orders. In the opinion of the conservation analyst Kaline Nascimento (2014), of the communities supported by WWF, the community of *Curralinho* is the most productive and also the best structured in its work with FSA and FDL. She considers this can be accredited to the fact that the rubber tappers live deeper in the rainforest, as much as two to three hours from the nearest city by car, and about three hours by boat.

Their location in the interior of the rainforest makes rubber production more valuable to them, as to transport perishable products, such as fruit, is far more complicated. Because of these challenges, the community does not become distracted by a range of other activities, instead focusing on the rubber production as their main economic source, to be stored and transported in bulk. The WWF-Brazil team in Acre has been working on transferring the responsibilities of dealing with clients, contracts, logistics and bureaucracy to a local cooperative and to the *Curralinho* producer association (Nascimento, 2015).

7.7.2 Long-term implications and perspectives

Increasing cattle farming by local communities is a challenging issue; whilst it may be more profitable, it leads to rapid devastation of the rainforest, increasing climate

change locally and globally, creating desertification, and provoking redundancy amongst the rubber tappers, threatening the culture and knowledge of their communities in relationship with the rainforest. Although prospects for increasing the number of communities producing FSA do exist, Nascimento (2014) asserts that it depends on market demand, and that 'it is necessary to plan strategies carefully in order to avoid wasting money and the creation of false expectations on the part of the producers'.

In July 2015 LATEQ led a workshop with the community of *Parque das Ciganas* and another one with the *Curralinho* community for the production of FSA in joint efforts with WWF-Brazil. This new workshop for the training with the FSA updated the communities with LATEQ's most recent research, which includes the addition of natural essences in the recipe of the coloured rubber in order to combat the smell of the latex, and changes in the vulcanizing mixture to make it better suited to hands-on manipulation (Nascimento, 2015).



Figure 7.28: Rubber workshop, June 2015 (Nascimento, 2015).

Since the Sky Rainforest Rescue project occurred in 2012–2013 we have discussed the idea of further support for the handicraft activity in *Parque das Ciganas*, in which they

have expressed continued interest. The current training with these communities has signalled new perspectives in the direction of the handicrafts.

7.8 Summary

The application of the reflective methodology addressed by this chapter was also a post-rationalization of Case Study 2. The detailed description of my experience as the designer enabled narratives to be created about the place, people and interaction during the realization of this social innovation project. From my point of view, the close relationship between the designer and the artisan producers provides important data about the socio-economic, historical and environmental issues related to cultural and productive practices. By applying the reflective methodology, I could bring a holistic overview of my experience as a design consultant and gain insights about this local process and the design practice.

This case study demonstrates that the involvement of designers in projects for social innovation and sustainability requires an approach that exceeds the purpose of product development to encompass the performance of multiple and collaborative roles. Nonetheless, this chapter also revealed that social innovation cannot be measured by immediate results; it takes time and continued effort for a new productive activity to become established and to be able to promote change, at both personal and social levels. As part of this process, the development of capabilities appears to be subjective and gradual. As Frediani (2010) argues, the realization of capabilities depends on tangible and intangible conditions, which also determine

individual choices. Thus in this case study, capabilities were also presented as a manifestation of choices where more than one opportunity was available. In this context, where a community relies on a small group of people, collective decision-making also can prevail upon individual will, influencing the realization of individual capabilities. This proves that social innovation for sustainability is a complex process that depends on a number of internal and external factors related to the community and to the network of relations.

The chapter reinforces the perception that not only the capability of the artisan producers and their community can be enhanced but also that capabilities are spread throughout the multiple stakeholders of the network. The result of the multiple interactions is mutual learning, but it is also the collaborative support that enables the realization of individual and collective accomplishments. Therefore the network is an important and immaterial factor of capabilities, which creates conditions for social innovation to grow and to multiply. In other words, a network of solidarity is produced. This makes the transferability of know-how to more people and other communities easier and faster. Even more important are the bonded and long-term partnerships that grow through the web of collaboration. They represent the feasibility of difficult achievements, and thereby are the strengths of capabilities.

The materiality of the rubber unfolded in different ways in this project. The interaction between the artisan producers and me gave birth to a creative integration of the rubber through sensorial exploration of its affordances. The method of the integrated artefact, which occurs during the processing of the material *in situ* was embraced

mainly by the women in the community. The expression of the wish to further develop their skills on the handicraft is what has at the time of writing been discussed as a perspective for the use of the coloured rubber in the community of *Parque das Ciganas*. The hybrid artefact, which we created by combining rubber and lace, represents another way through which design and artisan producers can come together again. The independent artefact, though, which comprised the jewellery collection, was the protagonist of this project, as it became the medium through which the Sky Rainforest Rescue communicated its projects with a wide public. Through the jewellery collection the rubber became the core artefact, the boundary object, between the community and the consumers through which the meaning of the material to the wellbeing and the productive conservation of the rainforest could be shared. In the following chapter I examine the reflective methodology and compare its applications on the two case studies.

8 Reflecting on the methodology and findings

This thesis has two main contributions to the design field: one is the investigation of designers' involvement within a phenomenon of social innovation taking place in the Amazon rainforest; the other is the development of the reflective methodology. This chapter discusses the application of that methodology on the two case studies presented in Chapters 6 and 7. It compares the characteristics of the case studies and sets out considerations on the use of the reflective methodology. Through the application of the reflective methodology some findings, both specific and general, emerge. The reflection triggered by the methodology gives rise to discussion about the context of the local community, the design practice, the artefacts and the network of relations. Importantly, it attempts to embed the ethos of capability throughout.

8.1 Introduction

This chapter examines the application of the reflective methodology set out in Chapters 6 and 7. As a reflective thinking tool, this new methodology raises discussions on the interactions between designer and artisan producers, the manifestation of capabilities within a social innovation process, and the roles of designer within this process.

8.2 Comparing Case Studies

Table 8.1 summarizes and compares the application of the reflective methodology on the case studies. It demonstrates that the reflective methodology is applicable to both design research and professional practice, being a tool to guide reflection through the specificities of each situation. It can be observed that the artisan producers of Case Study 1 were already skilled in the production of the FSA rubber and the artefacts; Case Study 2 presented a different context, whereby it was during the project itself that the rubber-tapping families learnt this method of production and the making of

the rubber artefacts. Therefore, the collaboration was also determined by the artisan producers' experience with the material. While initial discussions focused on new ideas to improve the existing artefacts (the shoes) and new ones, in the second case ways of creating and handling new material were taught from scratch, and so its materiality began to be explored freely. My role as a design researcher and design manager is also a crucial difference; which in the second case was linked to a client with pre-established targets. In addition, the locations of the interactions were different from each other, both geographically and in their physical and social configurations. The similarities between the two case studies, sharing the same productive activity and the same cultural background, was another interesting point that enabled me to see how the rubber creates a connection among communities. It allows the multiplication of social innovation amongst communities.

Table 8.1: Comparing the reflective methodology in the case studies

	Case Study 1 (Chapter 6)	Case Study 2 (Chapter 7)
Application	Research	Professional practice
General context	Rubber-tapping community	Rubber-tapping community
Specific context	Rubber tappers and artisans. Collaboration with one main artisan and one woman.	Small community of rubber tappers (about 30 adults and their children). Men and women participated in the project.
Product	Rubber shoes and other artefacts	Rubber sheets
Intentions	To improve aspects of the shoes. To develop other products. To identify needs and to support the artisan producers in their enterprise. To observe the process of interaction between the designer and the artisan producers.	Introduction of new method of production (FSA). Production and income generation.
Methods and tools	Collaboration and dialogue Field diary and notes during the interaction Audio-visual: photos, videos and audio recording Interviews Joint agenda Applied artefact – stamps	Collaboration and dialogue Field diary and notes during the interaction Audio-visual: photos and videos Cultural probes: community members photographing and some of them, making notes as well.
Designer's roles and actions	Participant observer during production. Participation in meetings with community members. Liaison with other community members directly or indirectly involved with the rubber production. Collaboration on the improvement of the products and the development of new markets. Continued collaboration throughout the years. Diverse actions.	Coordination – design management. Conception and implementation of the project. Organisation of the training in the community, logistics, production, quality control, delivery of the material. Teaching of handcrafts techniques to women. Further actions in order to support continuation of the activity by the community.
Main findings	Capabilities extended to family, community and other communities.	Capabilities extended to the stakeholders of the network and to another community.
Theoretical outcomes	Independent, integrated and hybrid artefacts	Capabilities perceived as collective quality

1.3 On the experience of applying the reflective methodology

In Chapter 6, I discussed the post-rationalization of the case studies through the reflective methodology. The application of the reflective methodology to the case studies helped construct the theory and improve it. For instance, I was prompted to move back and forth between Chapter 5 and Chapter 6 in order to further develop the

methodology; while its application in Chapter 7 occurred in a smoother, more direct way, as it was better established at that point. It is important to emphasize, as indicated in Chapter 5 (Table 5.5.4) that the reflective methodology is also proposed as a tool for the analysis of the process when the design researcher organizes and analyses the data. Ideally, though, this methodology follows the whole process of preparation, interaction and examination, alongside further reflection of the content generated during this process.

When applying the reflective methodology in the analysis of collected data and materials, the designer should balance personal reflection with the data on the context and manifestations of the voices of the people in that place. In both cases, the writing stage is an integral part of this process to be made by the designer during the interaction – through field diary and notes. The reasons being: one, the data collected, even if through the perspectives of analysis, will be messy and extensive; two, the subsequent examination of the process gives the analyser space and a different headspace to reflect on the process.

Reassessing the process through the reflective methodology gave me several new insights and findings. It also facilitated a better organization of the extensive amount of data, providing a more holistic analysis than before.

8.4 Findings on the artefacts

The materiality of the artefacts acquired increased in importance during this research. The concept of 'artefact of mediation' acquired new meanings and was also expanded to the concept of 'boundary object'.

Through the materiality of the rubber, the historical and cultural context of the rubber-tapping communities in the Amazon rainforest was introduced; sustainability was discussed as an intricate process in which both tensions and opportunities co-exist; social innovation becomes one of the routes used to deal with the socio-economic and environmental challenges, and also emerges from the materiality of the artefacts. The technological integration of new methods and materials by producers also generated a rise in creativity resulting from new uses of the material, new productive activities and new capabilities in the rainforest – so that the new artefacts become sources of income, means of social inclusion, symbolic values and objects of contentment (Chapter 3).

Activity Theory added the view of the artefact as mediator of the interaction between activity systems. This perspective is brought to the reflective methodology, in which the artefact is the meeting point of dialogue and collaboration between designer and artisan producers (Chapter 5). Through the application of the reflective methodology in the case studies, the transformation of materials and artefacts in relation to processes and locality gave birth to the terminology of the independent, the integrated and the hybrid artefact (Chapters 6 and 7).

8.4.1 Rubber as artefact of mediation

In the reflective methodology, rubber is the primary mediating artefact between the designer and the artisan producers. The artefact dialogue and collaboration give birth to the hybrid artefact. The perception of the connection between artefact and place is one of the important findings of this thesis; the encounter between the designer and the artisan producers takes place through the rubber as artefact of mediation.

‘Artefacts’ here correspond to materials, tools, and objects through which human beings interact, construct and transform the world. Communication through an object that has been collaboratively constructed in the encounter of different activities or ways of thinking is called ‘artefact mediation’ by Engeström (1999; 2001; 2005). The artefacts constitute the materiality of the world and can be palpable or intangible (e.g. words can be considered as artefacts). The artefacts can both exist before the interaction and develop from it. The results of the applications of the material produced locally depend on both the manufacturing process and the relationships emerging from it. Therefore I suggest the following taxonomy in the understanding of the artefacts:

Independent artefacts: objects or products that can be produced away from the locality where the material is sourced. The independent artefact results from turning ready-prepared material into artefacts. Their use can be independent of the production process. They can be connected to the community, though, by employing their materials in design products. An example is the use of FSA rubber sheets to make fashion garments or design products such as bags and jewellery.

Integrated artefacts: objects or products produced *in situ*, which are dependent on environmental conditions or the process of producing raw materials. These are of necessity closely linked to the local culture. The integrated artefact is produced during the production of the material; that is, they are derived from the manipulation and transformation of the material during its processing. An example is artefacts such as shoes that can only be fabricated with fresh, wet latex during the processing of the rubber. FSA can either be made in the rainforest or in the laboratory. This is a genuine process that can be integrated into the local production of the material such as in the shoes made by Jose de Araújo.

Hybrid artefacts: the results of encounters between the designers and artisan producers, or from a combination of integrated and independent artefacts. Designers and artisan producers amalgamate their cultural and practical backgrounds to create hybrid artefacts.. An example is the glasses cases that Araújo and I prototyped.

This classification of the artefacts is an outcome of this thesis. It developed through reflection during the practice, in observation of the affordances of the rubber in connection with the cultural and natural environment of the local production. The full realization came later, through further reflection generalized to other community contexts of production of materials and artefacts, where exchanges between local and non-local generates new hybridisms.

Panel 8.1: Integrated, independent and hybrid artefacts

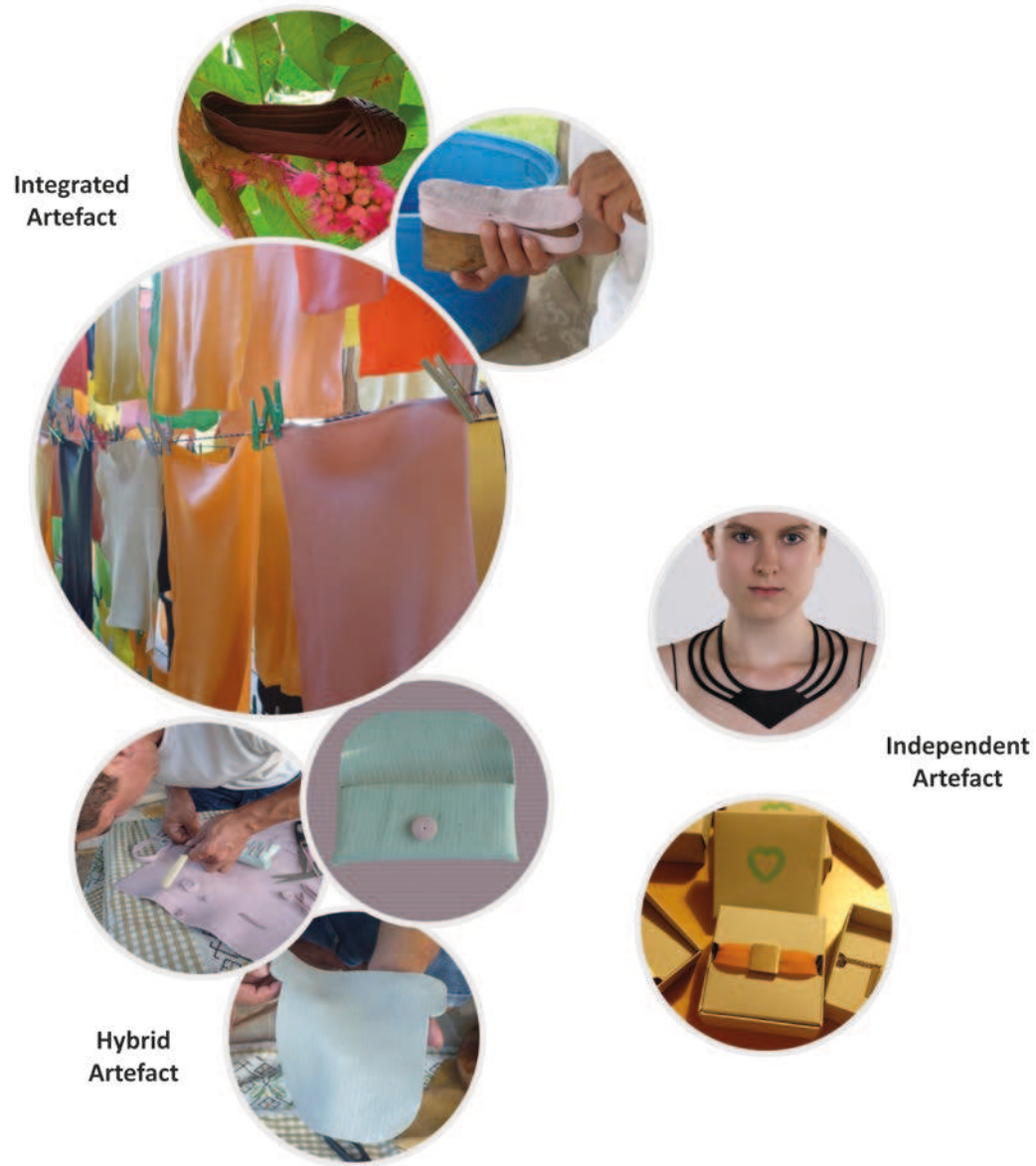


Figure 8.1: The construction of the artefacts

Carter (2004, 11–12) considers collaboration between different knowledge and creative practices as creative research, which is expressed not just through the development of new practices and artefacts, but also in their implications for social, ecological and political spheres. This kind of interaction that brings practices, cultural backgrounds and other differences together is also perceived by Ingold (2011) and Bhabha (1994) as the occurrence and constitution of the ‘beyond’ (Chapter 3). In terms of the categories set out above, this would translate as the hybrid artefact, a physical expression of collaboration between the designer and the artisan producers.

8.4.2 Rubber as boundary object

The perception of rubber as a boundary object came from my experience within the community context as well as from the relationships within the networks that grew from Case Study 1 and Case Study 2. As discussed in Chapter 4, the ecology and technology of the rubber from the Amazon rainforest relates to micro and macro dimensions, that is, from local communities to a global market. Social innovation occurs in this ‘in-between’ that characterizes the network of relations and that in this case stems from the rubber. It is rubber that forms the connection between people from inside and outside the rainforest, between agendas and networks, and between different practices, communities and institutions.

The plasticity of the rubber – its ability to stretch and recover – can be a metaphor for the ways it binds together communities throughout the rainforest, as well as dissimilar

communities, and that links the networks of relations between the rainforest and the outside world. Thus, we can understand rubber as a boundary object:

Boundary objects are objects which are both plastic enough to adapt to local needs and the constraints of the several parties employing them, yet robust enough to maintain a common identity across sites. They are weakly structured in common use, and become strongly structured in individual site use. These objects may be abstract or concrete. They have different meanings in different social worlds but their structure is common enough to more than one world to make them recognizable, a means of translation. The creation and management of boundary objects is a key process in developing and maintaining coherence across intersecting social worlds (Star and Griesemer, 1989, 393).

Boundary objects can acquire different meanings in different social worlds, but they retain a commonality between them. They are also objects of intersection and translation between communities of practice (Bowker and Star, 1999 in Harp, 2010, 50). However, as exemplified by the rubber, the boundary object can promote even more complex collaborations; according to Jean Lave and Etienne Wenger (1991), a boundary object can promote collaboration around a common practice and task.

In its role of boundary object, rubber links a diverse range of communities, both indigenous and non-indigenous, who co-exist through a shared sense of identity in the rainforest. This material brings the dispersed populations of the rainforest together, enabling them to exert political pressure of ecological significance on local and national government. It also connects these communities to more extensive networks that comprise industrial factories, local and national government and non-governmental institutions, among other entities, and a series of professionals, including designers. Thus, this boundary object motivates an encounter and relationships between similar and different realities. It is the central element of the network of relations and the

historical, socio-economic, political and environmental link across the diverse communities in the rainforest. This common element also connects different agendas and practices, promoting conversations and actions around shared concerns such as the sustainability of the rainforest populations in the model of productive conservation. The diverse actors and entities in the network can support each other's efforts and complement each other's practices through the embodiment of similar values and objectives. In this context, natural rubber is the primary boundary object, but one which technological and creative modifications resulting from social innovation can result in new materials and products. Consequently, it generates new boundary objects, and therefore, new ties and boundaries in the network of relation.

8.5 Individual and Collective Capabilities

The reflective methodology encourages the perception of learning processes that occur through practical interactions between people, their practices, their knowledge and their networks. Transformations are expected from these interactions (Chapter 5), among which it may be possible to perceive the emergence of new capabilities and the enhancement of existing ones. Sen (1999) asserts that capabilities can be both opportunity and result, such as the enjoyment of free time with family; this can also represent a capability, as constitutes one's wellbeing. The possibility of realizing and enjoying something defines capabilities in the logic of freedom maintained by Sen.

By applying the reflective methodology to the case studies retrospectively, it was possible to perceive transformation in the individual and collective context of the

communities over a period of time. For example, after a time, Nazaré stopped manufacturing shoes, while Araújo further developed his capabilities, overcoming the difficulties that he had at the time of our first encounter. There is evidence that many of the visions and discussion that emerged during the fieldwork have become today's reality. For example, during the discussion of the agenda with the community (Turning Points, Chapter 6, Section 6.7.4) we discussed the need for a continuous and accessible supply of the coagulant needed to produce both FSA and FDL. Its lack has been a serious hindrance to more autonomous production. From the 2011 meeting, Pastore generated the idea of implementing the process *in situ*; since then, his team has been researching and developing the idea, and the first two ovens for distilling liquid smoke were implemented in July 2015 – one for Araújo and the other in the Assis Brasil cooperative, for the rubber tappers to share (Nascimento, 2015). It is clear that since then Araújo has become more professional, improving his finish, logistics and production and, with his wife and two more people, multiplying the creative possibilities of his work. This process shows that individual and collective transformation is a continuing process and that capabilities can be a distributed quality, as discussed below.

Through the perspectives of turning points, and technological and creative integration, the reflective methodology encourages the perception of transformations; creative insights and integration of new learning that emerge from collaboration and dialogue. The perspectives of 'resilience and legacy' in particular encourage the designer to reconnect with people and examine the present in order to perceive whether their

interactions have had any implications beyond the interaction itself, and whether social innovation is an ongoing process in adaptation and evolution.

8.5.1 Distributed agency and capabilities

Through the expansion of the network of relations, more knowledge and possibilities of realization can be generated. Figure 8.2 represents the interconnections between and across the communities that have rubber as a boundary object.

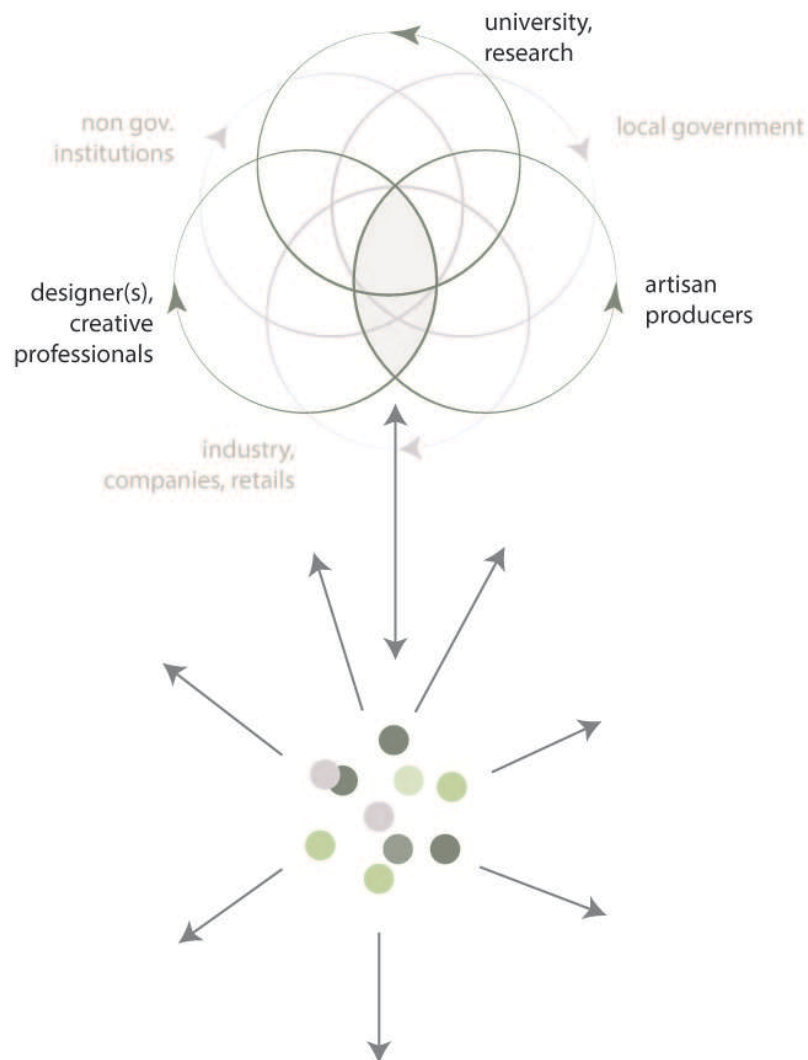


Figure 8.2: Circulation of knowledge, distributed capabilities and multiple consequences.

This expanded network that brings FSA producers together, with this rubber as a new boundary object, demonstrates the persistence of the multiple stakeholders whose involvement supports the continuation and multiplication of this social innovation. Thus, one of the outcomes of the interactions generated by FSA was the social capital formed around this specific kind of rubber. This is represented through the continuous engagement of common stakeholders with the different communities (Case Study 1, Case Study 2 and the community of Curralinho – Chapter 7) and the links between communities. These durable relationships are an important asset that enables social innovation to occur, facilitating implementation, support and multiplication of strategies and knowledge. Relationships are a significant part of the meaning and power of social capital, facilitating the actions of actors (Bourdieu, 1986 in Fuller and Tian, 2006: 289).

The formation of social capital is an asset (Fukuyama, 1995 in Thompson *et al.*, 2000: 330), which enables the realization of individual and collective capabilities by mutual support and joint effort. A network of mutual support appears pivotal in the case of the social innovation in the Amazon rainforest, which is made even more necessary due to the long distances and limited communication between the communities.

The links built by the involvement of professionals, communities and institutions are important for generating and enhancing capabilities. Mark Granovetter (1973) recognizes the importance of interpersonal ties in the network of relations in which the distributed actors are mutually committed to each other. Fuller and Tian (2006)

and Granovetter (1973) see the advantage of small-scale interactions in generating social and symbolic value, in which emotional involvement motivates 'varied macro phenomena as diffusion, social mobility, political organization, and social cohesion in general' (Granovetter, 1973: 1361). The social innovation network has these characteristics, which can be observed by the continued involvement of stakeholders in supporting the local initiatives in the rainforest and helping multiply knowledge and experiences. The emotional connection in this example appears to be between people and related to the social and environmental causes.

Social capital relates to the interdependencies that are part of the mutual services and dynamics of society; it enables initiatives and entrepreneurship to evolve. An expansion of a network means new connections and opportunities for realization, such as new markets, clients, consumers, funds and research. Social capital represents the feasibility of the material and immaterial assets that enable social innovation.

The effects can also be counterproductive, such as when the relationship between the designer and the artisan producers does not go well. This can signify a break in the connection of the network and perhaps the loss of opportunities. On the other hand, as a professional who works closely with the artisan producers as well as with markets and clients, the designer can have a positive influence in matters of wellbeing by fostering opportunities that contribute to the creation of materials and immaterial assets.

The understanding of capabilities as essential qualities distributed across the network of relations reinforces the idea of mutuality and solidarity enabling individual and collective capabilities both inside and outside the local context. This notion refers not only to a tendency towards dependency, but also to the proactive engagement of the diverse actors in the network of relations, learning from one another and supporting each other. This helps promote long-lasting collaborations that enable individual and collective achievements in social change and sustainability. 'Distribution implies that the nature of design is such that the knowledge and capabilities of the group do not derive simply from the summation of individual knowledge' (Alexiou, 2010, 74).

8.5.2 Circulation of knowledge

In the previous section, through the processes of interaction in the network for social innovation, capabilities become features distributed throughout the network of relations. The enhancement of capabilities occurs mutually between the stakeholders in a social innovation project where collective support enables continuous actions and collaboration. It also means that individual capabilities encourage the stakeholders to move towards other experiences, such as the multiplication of social innovation models in other contexts, or even an intellectual, tacit and life experience that becomes part of personal wellbeing.

The notion of circulation of knowledge (Chapter 6) came from reflecting upon the intersection between our practice and knowledge in the first Case Study. As demonstrated in Chapter 6 (Figure 6.16), the intersections between different practices

and knowledge formed the basis for the notion of the relationship of the stakeholders – the artisan producer, the laboratory and the designer (in this case, me) – with the artefacts. This idea resulted in the expanded notion of capabilities distributed in the network of relations, as discussed in Chapter 7.

Figure 8.2 represents the circulation of knowledge in the social innovation of rubber, as exemplified in this study. The process of multiple exchanges through the interactions between knowledge, practices and agendas promote mutual learning and influences. As a result, the complexity of the social relations engenders indeterminacy, and can lead to a huge range of consequences, which can either be damaging or beneficial. When positive, these relationships can act as the driver of social innovation, enabling the realization of capabilities throughout time.

8.5.3 The collaborative process

I consider that both of my experiences within the community context went well, both because of the relationship with the people and because we engaged in harmonic and productive collaboration. I experienced no problem in terms of empathy or conflict during the time I spent working with the producers.

The field research in Assis Brasil (Case Study 1) developed well beyond my expectations due to the dialogues that developed around the production, design and handcrafts. This not only connected us but also taught me a lot, as well as providing a large amount of data for this research. The second experience, with the community of

Parque das Ciganas, took place partly as a consequence of the first experience. It too was very positive for me, and the participants both during and after the project clearly expressed their perception of it as beneficial and positive for them. In this second experience (Case Study 2, Chapter 7), the targets established by the project were also exceeded. Not only did production considerably exceed the minimum set by the project, but also the introduction of the handcrafts became a highlight due to the interest it caused in the women of this community. As a consequence of the Parque das Ciganas project, about eight months later FSA production was taught to the Currallinho community, a process I advised on and followed from afar. Both communities are nowadays producers of both FDL and FSA, and Araújo had developed his production group, besides teaching the technique to other communities.

8.5.4 An agenda for capabilities

In Chapter 6, the artisan producers and I developed an agenda listing the current challenges and aims that they considered relevant to their production and their lifestyle. This worked as a useful tool to promote reflection upon the capabilities. This joint agenda resulted from a list that I had drawn up whilst working with the artisans on the rubber artefacts, by taking notes and validating the points with them at the end of the activity. The list included their needs, the challenges of production, and their ideas, aims and dreams. From these conversations we discussed visions of how to achieve them; what they could do, and what I or another individual or institution could facilitate. This was a valuable resource that encouraged further conversations, actions

and realizations. It was also an important document to reassess the activity by identifying what changed and what did not.

8.5.5 Capabilities as legacy of the interactions within the process of social innovation of the FSA rubber

The last part of reflective methodology is the 'resilience and legacy'; the designer is encouraged to reconnect with the artisan producers after a period of time in order to perceive whether the encounter with them had had any effects over time – whether, for example, the new method had been adopted or/and adapted, or whether new challenges had arisen from the new activity. By keeping in touch with the artisan producers and the network of social innovation it may be possible to observe any manifestation of capabilities that emerge from the collaboration with the designer and also developed from the integration of social innovation; how there was a continuation in this process in which the designer had taken part at some point.

In Chapter 7, I mentioned that after the Parque das Ciganas community project, the producers decided not to engage in a new project. In that chapter, I also discussed individual and collective capabilities in which a collective decision appears to have resulted in the discontinuation of FSA production in 2013. However, the continuity of the handcraft production by the women from this community since our encounter in 2012, added to their manifest interest in further development, resulted in a new course to produce FSA, which took place in July 2015 with the LATEQ laboratory and WWF-Brazil. In this workshop, both the Parque das Ciganas and Curralinho

communities learnt about the new recipe to make an FSA impregnated with natural and local oils that give it a pleasant smell (Nascimento, 2015). Forthcoming prospects point towards further development of the handmade artefacts. A video released in 2015 showed this training course.⁴¹ In the video, rubber tapper Sr Raimundo of the Curralinho community declares that before learning the new methods of making FDL and FSA they 'had nothing and they could do nothing', but that nowadays they live with dignity, having for example built a stronger and bigger house for their families. In addition, rubber tapper Mr. Pedro from the Parque das Ciganas community tells us that as he learnt to tap the trees from his father, so he will also teach his children to make a living from rubber. These assertions reinstate the desire that many rubber tappers have to continue living in the rainforest, as also expressed by Mrs Andréia in Chapter 7. In this same video, she expresses satisfaction and pride by speaking about the importance of the rubber production for her community, and shows bracelets and a pair of shoes that she has made from FSA. This displays proactive engagement with the new production methods, and demonstrates that outcomes of the learning process are an ongoing aspect of a social innovation process which unfolds over time. Finally, it illustrates how capabilities evolve from the materiality of the artefacts also in a subjective way.

Through observing the process of social innovation of the rubber-tapping communities it is possible to consider their evolution as a process of resilience from which new perspectives are regenerating communities and fostering new capabilities. The results

⁴¹ WWF-Brasil (2015). *Dia da Amazônia - Pedro e Raimundo (Seringueiros)*. <https://www.youtube.com/watch?t=23&v=MJvE6TMx4Lw> Accessed: 10 Sept.

include improvement of socio-economic conditions, reduction of migration to urban centres, decrease in deforestation, reinforcement of identity, and mobility, among other material and immaterial assets.

8.5.6 Social innovation as a process of social reinvention

During my years researching and working with FSA produced by and with communities, I observed communities developing and overcoming many challenges. Nevertheless, the artisan producers do face challenges in order to establish themselves with the new production methods and they do not work for everybody or in all the communities. There are many factors that influence technological and creative integration of the new materials in the economic activity. These include location; support of local and non-local entities; the possibility of choosing other economic activities; individual and collective decisions; local organization – for example into cooperatives and associations that help individuals sell their products; confidence and perception on the potential of the local materials; and demand for the material, among others.

Gomes *et al.* (2012: 260-271) discuss the identity of the rubber-tapping communities in the state of Acre. They point out that the identity of the rubber tappers has shifted through time. By the time of the Rubber Boom at the end of the 19th century, the identity of the rubber tappers was linked to exploited labour spread through the rainforest; then the rubber tappers became the 'Rubber Soldiers' during the Second World War, which identity became associated with labour migrants, who were soon

forgotten, becoming anonymous labourers in the rainforest. Later they were associated with the social movement for agrarian reform in the 1970s and 1980s, when the rubber tappers became politically stronger, taking part in the creation of the 'extractive reserves' (which I defined in Chapter 4 as protected areas of productive conservation). The rubber tappers became recognized as 'guardians of the rainforest' whose identity was linked to its preservation. In addition, the identity of the rubber tappers is linked across the communities through the material and through their livelihood, which mostly defines the regional identity of the state of Acre (Gomes *et al.*, 2012: 262). The integration of new methods of producing rubber appears to herald a shift of identity; the communities are becoming recognized by the kinds of rubber that they produce and by their artefacts. This can already be observed in conversations with people of the region who know the origins of the rubber products. This new identity linked to the material through social innovation may thus signify a process of reinvention of individuals and their communities.

8.6 Designers' roles within the interactions

The application of the reflective methodology to the collaborative practices of the case studies also illuminated a reflection upon the diversity of roles that becomes part of the designer's work. In this network of relations, in which design becomes a social process, Alexiou suggests that social interactions occur in various ways (2010, 74). This is similar to Manzini's idea that a designer can lead, contribute to and support social innovation (2014). .

Table 8.2 identifies some of the diverse roles that I identified through reflecting upon the interaction with communities and other stakeholders involved in Case Studies 1 and 2.

Table 8.2: Roles of the designer

Roles of the designer	Actions
Designer	<ul style="list-style-type: none"> - Design the jewellery collection - Collaborate with the celebrity ambassador - Work with artisans (other than community members) in developing the design of the jewellery - Define production partners for the jewellery - Quality control of the material - Advise on stock photography
Manager	<ul style="list-style-type: none"> - Deal with the implementation of the project in the community - Organize tutoring/capacitation - Support and monitor the harvesting of the material in the community in the Amazon rainforest - Organize the logistics of the material - Facilitate and support the media team and the celebrity ambassador while in the rainforest - Advise on cost and retail prices - Deal with paying producers, materials and other necessary goods. - Organize logistics: Transporting materials / Importing materials and products into the UK
Researcher	<ul style="list-style-type: none"> - Research complementary materials and production processes - Document the process - Report and present the process to the clients - Analyse the process of collaboration for social innovation
Advisor	<ul style="list-style-type: none"> - Promote further capabilities for the community - Add value to the material through design and crafts - Teach the handcrafts technique to the local families - Discuss prices for the materials and artefacts
Communicator	<ul style="list-style-type: none"> - Work with relevant stakeholders. Fulfil the different agendas. - Mediate conversations between community and stakeholders - Integrate stakeholders
Facilitator	<ul style="list-style-type: none"> - Support the continuity of the production through linking community to other projects and clients
Advisor	<ul style="list-style-type: none"> - Advise on establishing fair prices for the material in the market - Advise on the viability of the material - Continue supporting the communities, even after the project
Tutor	<ul style="list-style-type: none"> - Tutor the process of making FSA - Teach colour mixes - Facilitate the making of rubber handcrafts
Learner	<ul style="list-style-type: none"> - Learn with the artisan producers about the experience
Client / Entrepreneur	<ul style="list-style-type: none"> - Buy material from the communities, to develop further projects

The roles exemplified in Table 8.2 reveal some of the ways that the professional designer can influence social innovation both directly and indirectly. The main insight generated by listing these roles was the recognition that designers can take part in

social innovation processes in different stages of social innovation. I identified three main phases, and I suggest here that the designer can contribute to social innovation by:

- i) Seeding;
- ii) Cultivating; and
- iii) Harvesting.

Seeding is associated with the new ideas and methods that can emerge from dialogue and cooperation, at which point the designer could assist the development of new strategies and products. In 2012 I taught two women in the *Parque das Ciganas* community (Case Study 2), how to make rubber handcrafts, and they are continuing to developing them (Figure 8.3). **Cultivating** means supporting creative emergence in which the designer can nurture social innovation, as exemplified by Case Study 1.

Harvesting refers to acquiring materials or artefacts respectfully, linking with new markets, and promoting continuity and autonomy. This continuing process is an outcome of the involvement of numerous professionals in the network of relations, including myself – but also led by the determination of the artisan producers.

In relation to the practice, the professional designer has a close relationship with the local artisan producers. The liaison of designers with local producers is different from that of other stakeholders, because it occurs through the materiality of the artefacts, from which creative and collaborative endeavour comes to life. Friendship, trust and empathy are integral to this process. Through this closer relationship with the artisan producers, the designer can be an important actor who understands the local needs, the production process and the outside market.



Figure 8.3: Amadeu teaching women in the Amazon rainforest how to make rubber handcrafts, 2012.

8.7 Summary

In this chapter I examined the application of the reflective methodology on the case studies. I highlighted the distinctions and commonalities between them, from which the findings came to light. As a tool, the reflective methodology is intended to be used during the interaction between designer and artisan producers. The application of the reflective methodology on two different case studies demonstrated its potential to be applied to a variety of experiences within other community contexts. The next chapter brings final considerations to this thesis, discussing perspectives for the application and continuation of this research.

9 Final considerations

This concluding chapter reviews the research questions and reinstates the original contribution of the thesis. It then highlights key findings and considers the uncompleted nature of the subject by pointing to other fields of enquiry and the possibility of future research.

9.1 Introduction

This research investigated the involvement of designers within local and small-scale producer communities, often in regions where social needs are identified together with a need to drive change. Professional designers from different areas – such as fashion, product and graphic design – have been getting involved within community practices through initiatives of social innovation, social entrepreneurship and value-led business. In this way, a designer liaises with a community and thence with an extended network of clients, institutions, the public and private sectors, and other stakeholders, to work within the scope of local culture and location. The aim is to contribute to socio-economic opportunities linked to individual and collective wellbeing. Evidence has, however shown that the current design methodologies for social change within the producer community context are inadequate. This research proposes a new way of reflecting upon and through designer and artisan producer interactions in order to make a contribution to this approach.

9.2 Review of research questions

The research questions posed in Chapter 1 set the aim of this thesis as promoting a holistic understanding of the interactions between designer and artisan producers within the challenging process of social change and sustainability (Note 9.1). From understanding the highly situational character of each interaction between designer and artisan producers, the thesis replied to the research questions by proposing a dialogical and reflective approach during the practice and the interaction. The methodology tool features reflection on the context, the collaborative process and the extended network of relations. By embedding the ethos of capabilities (Sen, 1999), the objective is to generate reflective thinking in order to promote further learning and insights that can contribute to individual and community wellbeing.

Note 9.1: Research Questions (Chapter 1, Section 1.3)

- i) How could an interaction between designer and local producers be holistically understood in its process and implications?
- ii) How could this encounter between designer and local producers contribute to enhance individual and collective wellbeing?
- iii) How can designers who work with local small-scale producers and artisans analyse their practices aiming at social change and sustainability?

The case studies of my experience as researcher and professional working with the rubber-tapping communities in the Brazilian Amazon rainforest were paradigmatic in illustrating the research scenario: a collaboration between designer and artisan producer taking place through the local materials and artefacts and within a context of social innovation. Observations on the complexity of the design approach to social change within the artisan producers' context was an outcome of the fieldwork realised

in 2011 and 2012. This led me to question the use of methodologies that could support both design practice and research within this scenario. This gap in the field of design drove the development of the new methodology and further investigation into the specific contexts of the rubber-tapping communities.

Further investigation into the social innovation led by new methods of producing rubber in the rainforest confirmed and expanded the initial insights into the materiality of the artefacts.

Note 9.2: Specific Questions (Chapter 1, Section 1.5)

- i) What is the significance of the materiality of the wild rubber?
- ii) Can further development of rubber artefacts, according to new methods of production, contribute to the wellbeing of local communities in the preservation of the Amazon rainforest?
- iii) What is the relevance of design in this process?

The new methodology also helped to answer the research questions regarding the specifics of the case studies and to observe the roles of design and designers within it.

9.3 Research progression

This thesis began by exploring the materiality of the rubber from the Amazon rainforest, where rubber, growing wild, is the economic mainstay of several communities. From this material unfolds a social, cultural, economic and environmental tension regarding social and environmental sustainability. Chapter 2

discusses the meaning of sustainability in this context where the feasibility of the relevant livelihood is based on the economic model of productive conservation (Hall, 1997), which combines economic activity with preservation of the rainforest. However, local communities become vulnerable in the face of the current lack of market and socio-economic opportunities within this setting. It is clear that interdependence of local and global markets is fundamental to these communities – which are only partially subsistent. This problem has been affecting entire communities, causing migration, sub-employment in big farms (e.g.: soy plantations and cattle), deforestation, and impoverishment, among other issues that decrease people's wellbeing. One of the positive responses to these challenges is seen through the social innovation initiatives which have been embraced by local communities in cooperation with the public and private sectors. New methods of producing rubber *in situ* have promoted new opportunities; FSA (*Folha Semi-Artefact*) is one such new material. This rubber is innovative as a new method of production, as a material ready to be turned into design products, and importantly, as a material that enables the handcrafts of rubber artefacts.

Chapter 3 presents the capability approach proposed by Sen (1999), relating to the effective opportunities that people have to live according to their values and choices. The significance of capabilities relies on material and immaterial aspects of wellbeing. Creative development through the materiality of the rubber by local producers in the Amazon rainforest signals new opportunities for productive conservation. The evidence for the possibilities of the new materials includes averting migration, promoting social inclusion of women, attracting young adults to continue the

productive activity, increasing income, promoting new markets, stimulating creativity, and reinventing the sense of identity, pride and contentment of individuals and communities. Within this scenario of emerging capabilities, designers have also taken part, by purchasing the materials to create their own products or by collaborating with community; both scenarios, however, require the involvement of the professional in the construction of capabilities to overcome the challenges, benefit the producers and meet the needs of designer or client – for example, ensuring that the quality of the rubber sheets is good enough for them to be used in designer products. Through a number of examples, the chapter discusses challenges and opportunities, seeing both design and crafts as a means to foster new capabilities.

Chapter 4 extends this discussion by investigating the interactions between designers and artisan producers in social innovation and entrepreneurship projects in countries of the southern hemisphere. This chapter provides definitions of and discussions about the roles and significance of design in an approach to small-scale producer communities. Kimbell (2012) defines designs-in-practice and design-as-practice, adding understanding to the interactions and the implications of design practices. The Brazilian context illustrates a growing approach to local artisans. Further examination draws on interviews with eight designers about their work with artisan producers within local communities in Africa, Asia, east Europe and South America; the interviews raise issues of the differences, the challenges and the benefits observed from the interactions. The organic nature of these encounters, which occur through the productive practices within the environment of the local context of the artisans, demonstrate that existent methodological approaches fail to embrace this complex

process. Similarities in the practice flagged by these designers substantiate the possibility of creating a methodology able to promote further understandings and improve the changes of enhancing capabilities in both the artisan producers and the designers.

Chapter 5 proposes a new methodology, as the main contribution of this thesis. The aim of the methodology is to guide designers and producers through a reflective process of social change in producer communities. The review of methods and tools taught and employed in design research and practice for social change and sustainability demonstrates a methodological limitation able to support a more holistic understanding of the social change processes engaged in by designers and artisan producers. The reflective methodology is formulated in these chapters by combining Activity Theory (AT) and the ethos of capabilities, with a contribution from Actor Network Theory. AT is a structured metatheory applied to empirical approaches to learning. It foregrounds the network of relations, identifies key entities in the interaction of analysis, and positions the artefacts as central mediators and motivators of dialogue and collaboration. The reflective methodology encourages a thoughtful approach to the practices aimed at the creation of opportunities for individual and collective wellbeing. In addition, it serves as a tool to document this process, bringing together micro and macro aspects of the interactions, nuances of the approach and practice of design, and insights into existing and potential capabilities.

Chapters 6 and 7 incorporate the application of the reflective methodology on the case studies, which encompass my experience of working with artisan producers in the Amazon rainforest. These interactions generated a considerable amount of data

including audiovisual recordings, field diaries, interviews and artefacts, among other materials. In a retrospective analysis of the experiences, the structure of the reflective methodology guided me through the organization, the interpretation through narratives and description, and the articulation of the findings that were the outcomes; all this was helped by my reflection upon the practice. The findings and reflections also resulted from embedding the ethos of capabilities. This application on the case studies made me reflect back to the methodology, leading to revisions and improvements.

Chapter 8 discusses the findings and insights of the application of the reflective methodology by comparing the applications in the case studies. The methodology also assisted with the observation of the roles of the designer within the case studies. Finally, this chapter summarizes and states the contributions and findings of this research.

9.4 Contribution to knowledge and originality

The reflective methodology is the original and major contribution of this thesis. It was devised from an unprecedented combination of Activity Theory (AT) (Engeström, 2001; 1999) and the capability approach (Sen, 1999) creating a practical and theoretical framework. The reflective methodology encourages the designer to perceive the context, process and interaction in a holistic way by looking at the same situation from different angles. Thus it promotes a detailed registration and reflection on moments of social, cultural and economic changes in the process of social innovation, which are

also linked to historical, political and environmental aspects of the locality. By doing that, it also provokes an examination of design practice within this process. In order to do that, six perspectives guide the reflection: constellation; diversity and conviviality; narratives; turning points; creative appropriation; and resilience and legacy. The perspectives of analysis invoke lived narratives from locality and time. The outcomes of this process are not only expressed materially, but also comprise the subjective aspects that flourish during and after the process of interaction. The reflective methodology, as well as AT, perceives the mediation of the artefact as mediator of the interactions between the practices and networks that the designer and the artisan producers bring together. Combined with the approach to capabilities, the reflective methodology importantly brings the perception of the material and immaterial aspects that are both part of this process and an outcome of it.

Another principal contribution of this thesis comprises the study of the current and ongoing phenomenon of social innovation among rubber-tapping communities in the Amazon rainforest. The materiality of the rubber encompasses transformations from the raw liquid sap to a range of different materials and artefacts. These transformations embed the significance of cause and effect in the configuration and re-invention of the socio-cultural context of the local communities connected to the natural environment of the rainforest. Specifically, this research explored the coloured rubber FSA (*Folha Semi-Artefato*) which can be developed by social innovation into creativity through design and crafts.

9.5 Key findings and new insights

Chapter 8 analysed the key findings and contributions of this research, which mainly emerged from the application of the reflective methodology on the case studies. Here I highlight and comment on some of the findings.

The documentation and reflection promoted by the reflective methodology extends beyond the interaction between the designer and the artisan producers in both place and time. The application of the reflective methodology, as in Chapters 6 and 7, generates the view of the process of interaction as part of a sociocultural and historical process that exists before the encounter between the designer and the artisan producers, and that has consequences afterwards. The reflective methodology encourages the researcher and practitioner to see the process holistically within the network of relations that extends beyond immediate interactions. Through the six perspectives, the identification of the artefact of mediation and the contextualization, the complexity of process of social innovation, in which the designer participates, comes to light. Therefore one of the considerations that I can perceive with the benefit of hindsight, is that the reflective methodology can help in the registration of historical and socio-cultural moments of transformations that encompasses social innovation.

One of the aspects that became clear was that social innovation cannot be limited to a single project, but is a process of transformation that is catalyzed and can flourish through proactive engagement, and continued actions and interactions led by a social capital network. A finding that emerged from this reflection was that the quality of

relationships is intrinsically related to the perception of the outcomes and challenges of these interactions. This also became apparent by listening to designers, artisans and stakeholders talking about their experiences.

Through the reflective methodology it was possible to perceive the rubber as an animate agent in this process, an element crucial to the wellbeing of the rubber-tapping populations. The materiality of the artefacts bonds the many relationships, motivating interaction between the multiple actors of the network. The materials resulting from the new methods of production also become new boundary objects by promoting new connections and forming social capital around this material.

The notions of 'artefact of mediation' and 'boundary object' are applied to other contexts, for example to an analysis of the work of communities in Ecuador that produce raw material and the hats for Pachacuti, or the communities in Bolivia and Peru that also produce raw materials and handcrafts for Trading for Development, among other cases described in Chapter 4. These cases of social entrepreneurship converge with the process of social innovation in the motivations for social change.

The fact that the artefact is central to the analysis makes the reflective methodology especially useful for designers, bringing to light the process of interactions and eliciting more about the social processes from the collaborations in which they take part.

Through the application of the reflective methodology, this interventionist research approach also becomes more evident; it means that the observations of the designer are also about their own performance and roles.

As outcomes of the application of the reflective methodology, the roles of the designer within the approach to the context of small-scale producers were scrutinized. In the discussion of the disciplinary field of design, the concept of design for social change and sustainability became understood not as a speciality but as an approach that is both disciplinary in its specificities and transdisciplinary. The transdisciplinary character of design is defended by Max-Neef (2005), who sets out the design needs of a multidimensional approach that is able to engender beneficial social impact. In this way design becomes both an integrative discipline and an extended practice.

As an integrative discipline, design for social change and sustainability would comprise of deep understanding of the context of approach, knowledge from diverse disciplines (e.g.: sociology, economics, forestry, politics, history, chemistry) added by a practice guided by values, ethics and cultural norms. The understanding of design as extended practice emphasizes the diverse roles that designers have to take on in this integrative and collaborative approach.

Outside these functions, the analysis based on the reflective methodology demonstrated that the designer is one of the professionals involved in the myriad stakeholders of the social network in the process of social innovation. This view brings an understanding of distributed capabilities and responsibilities.

9.5.1 Personal reflection on the research process in relation to the practice

The application of the reflective methodology as a research tool for examining the my own experience (Chapters 6 and 7) brought up the challenge of balancing personal observations noted in field diary, for example, and the detached point of view required in the research process. In order to pursue reliability, circumstances and data were related (Easterby-Smith *et al.*, 2008) in the application of the reflective methodology. Thus the content of the experience during fieldwork includes data from interviews and other resources such as reports, literature and audiovisual material. Nevertheless, the writing about this process resulted in important insights related to a phenomenological perspective of place, people and events.

9.5.2 Originality of the reflective methodology

The reflective methodology is a contribution to the design field which has not been proposed by other researchers to date. It brings together the social approach of capabilities and the methodological approach to learning of Activity Theory (AT).

The application of AT alone in design for social change and sustainability would be an innovative contribution, as AT has not been employed in this way before. But by combining capabilities and AT, the reflective methodology provides a ground-breaking metatheory that consists of a systematic and theoretical approach to improve the understanding of interactions within contexts of social change. The approach to

capabilities provides the ethos of the interaction with the aim of pursuing individual and collective wellbeing.

9.5.3 Originality and relevance of the social innovation generated by FSA

This thesis originally discusses social innovation and sustainability through the materiality of the rubber produced in the Amazon rainforest. It provides an extensive compilation of the different kinds of rubber currently being produced by local populations. This material is now seen as a boundary object and artefact of mediation, a central agent in the network of relations that together enable social innovation to take place. This complex discussion incorporates designers as important actors able to link markets, create new uses for the material and collaborate with local artisan producers to create socio-economic, symbolic and environmental value.

Through the course of this study, some publications relating to the rubber-tapping communities in the Amazon rainforest working with FSA came to light. These publications indicate a growing concern for the sustainability of these communities, and also demonstrate how social innovation is a current phenomenon that can help to foster sustainability in these populations. One is a report drawn up by the community association in Jamaraquá, in the state of Pará (2013)⁴²; it documents the FSA production process, workshops with designers, and the development of products. It provides comprehensive information about the socio-economic and environmental context of this community, highlighting the importance of FSA to their community.

⁴² Title of the Report (in Portuguese): *Relatório Final: Apoio ao Extrativismo e à Produção Artesanal do Látex da Seringueira da Comunidade de Jamaraquá no Parque Nacional dos Tapajós – Belterra (PA) – Baixo Amazonas.*

This report shows that this context is similar to that of the communities in Acre, and indeed other rubber-tapping communities disseminated throughout the rainforest.⁴³

The fact that these communities also produce FSA rubber connects them, although they are far apart, and confirms the way that a boundary object operates. It therefore also proves the transferability of social innovation to similar contexts.⁴⁴

Among a number of online articles, WWF-UK recently launched the brochure *Going Wild For Rubber* (WWF-UK, 2014), to which I contributed content and a review. It introduces the production methods of wild rubber in the Amazon rainforest, and enumerates producers, designers and suppliers. A Portuguese version was published in 2015 (WWF-Brasil, 2015). These publications aim to promote the productive conservation of the different kinds of rubber in order to encourage social entrepreneurship and external investment. All these publications highlight the processes of social innovation through the rubber, reinforcing the importance of design and crafts in promoting social and environmental sustainability. This thesis complements the content of these publications by providing further information about the material, and, as an original contribution, bringing in a discussion of the emergence of crafts in the context of how design relates to it.

⁴³ The community of Jamaraquá is located more than 1,000 miles away from the communities in Acre.

⁴⁴ The community of Jamaraquá learnt the method of producing FSA from the TECBOR/LATEQ team. I also have been in touch with them, to buy rubber and discuss ideas for future projects.

9.6 Reflecting upon the significance of collaboration

This section focuses on reflecting on the significance of the collaborative practice with the artisan producers. Rather than looking at the short-term success of the interactions with the artisan producer, I am interested in perceiving how this process evolves over time and whether new capabilities become manifested.

The reflective methodology facilitated the documentation of and reflection on the current phenomenon of social innovation among rubber-tapping communities in the Amazon rainforest through the narrative of social innovation related to the historical, cultural and environmental contextualization of the rubber-tapping communities, while the perspective of 'resilience and legacy' generates a view on continued achievements. Nevertheless, long-term achievements can only be observed through continual communication and continued connection with the producers and the network involved.

The hypothesis of the thesis is that designers can be instrumental in promoting social fairness and wellbeing. The collaborations, when considered beneficial by the parties involved, were seen as having professional and personal meanings that extended well beyond its direct economic outcomes. Mutual learning, friendship and unforgettable experiences were seen as self-transformative. Subjectively, it was perceived that the interactions influenced the development of capabilities, influencing individual and collective wellbeing.

Being part of a project of social innovation – being able to directly work with artisan producers in their communities – can be hugely rewarding and transformative. This is not just my own perception, but was also expressed by the designers interviewed in Chapter 3. As declared by three of those designers, these experiences had a long-term impact on their lives and the way they used design. After getting to know the producers, they became more thoughtful about them and considerate of them. Artisan producers from both case studies (Chapters 6 and 7) also expressed satisfaction in their work with FSA and about having worked with me.

The artefacts that come out of this process embed meaning beyond the physicality of the materials and artefacts. Ingold's theory that the artefacts tell condensed stories refers to the transformations of the materials by human subjectivity, a significance that is connected to stories of the place and people (2011). These objects also undergo transformation in use, and a change in their significance. This notion can be linked to the idea of designs-as-practice and design-in-practice respectively; the former connotes the significance that the artefacts carry in their lifecycle.

The meaning of the objects produced locally was also perceived as embedding the stories of place and of social innovation with the consequences that they imply for the personal and collective life of the artisan producers. Chapter 3 discussed the function of design to link producers to new markets beyond the local boundaries by collaborating to add aesthetic value. The placement of the artefacts in the non-local context then can become a way of increasing the significance and value of the local products. The artefacts incorporate unique stories of the people and the localities.

9.7 Transferability and applicability

This research and the resulting reflective methodology were devised for professional designers and design researchers in their practical involvement with small-scale and local producers. The reflective methodology proved to be both applicable and useful to design researchers and professional practitioners. It presents an opportunity to further understand the different roles the designer performs, such as those listed in Chapter 8 (Section 8.6) and the scope of design within the social realm. Finally, the methodology can not only have extended applications in design, but can also be useful to other professionals.

Theoretically, the reflective methodology was validated by its application in two different case studies. These demonstrated that the application of the methodology is circumstantial; the articulation of the process of interaction between the designer and the artisan producers with their extended network of relations creates visible aspects that are essential to social change and sustainability.

The application of the reflective methodology to the case studies prompted narratives often forgotten by the designer or not taken into consideration. Social innovation and the expansion of capabilities are not short-term achievements. Collaborating through design in this process encompasses complexity, uncertainties, tacit knowledge, and connection with the artisan producers and the place. It is difficult to reveal this process of collaboration that is so diluted in time; although many short-term outcomes can readily be identified, the other transformations evolve only gradually. They easily

become invisible, lost in time. This could mean the significance of this process is lost, but the reflective methodology helps to seize it.

This process requires analysis in order to diagnose problems and needs, to develop solutions, and to improve the professional approach. The reflective methodology offers guidance for reflecting upon the situations and processes. Although it is subjective, the discipline of analysis enables a more objective view of the process, and its more subtle aspects can be addressed. In this way, the use of the reflective methodology is intended to increase awareness about the particular situation of the place, people and about the work process. Its use is also aimed to identify patterns and common issues of design practice for social change and sustainability.

Some uses of the reflective methodology:

- As a metadesign approach to reflective thinking to be developed during practice in dialogue with artisan producers and other people from their community.
- As part of professional design practice in the preparation, reflection during practice and subsequent examination.
- As a design research method.
- As a learning tool to be applied by students in projects promoting encounters with artisan producers. The reflective methodology offers a way in which this practice can be discussed in the light of complexity and social change.
- As a way of documenting a process of social innovation, validate the practice and influence policymakers.

9.7.1 Applications of the methodology in other design approaches

The reflective methodology may also be useful for designers interacting in other community situations, broadening its application for social change. For example, the reflective methodology could be applied to urban projects in squatter settlements. This is the area of research and practice of the architect and researcher Frediani, who examines the application of Sen's capability's approach in collective actions for wellbeing and justice (2010). In his book *Design for Social Change: Strategies for Community-Base Graphic Design*, Shea (2012) reports a series of experiences in which graphic design can be applied in a community context with the aim of promoting and generating social values. He recommends certain principles to be observed by designers in their approach to social contexts of community, and the reflective methodology could be useful in adding depth to his analysis. Design company IDEO employs designers in the role of participant researchers within community contexts order to identify social needs and opportunities for social change. IDEO, too, could incorporate the reflective methodology into their human-centred design approach (IDEO.org, 2015).

9.7.2 Influencing governances, policymakers and funding institutions

The work of designers within social innovation and social entrepreneurship projects involves coalitions with local governments, local cooperatives and policymakers.

'Governance as a research practice involves the area of (...) policy making and concerns itself with the ways in which societies organize themselves to achieve certain goals'

(Lenneke, 2014:180). Designers dealing both with local producers and instances of the public and private sectors can have an influence on the development of governance strategies (Verran, 2009:13). Through the reflective methodology, social processes, needs and desirable situations can be documented and critiqued. In this way, the reflective methodology can aid the articulation of social needs and opportunities to influence decision-makers, funding institutions, researchers, and non-profit organizations.

9.8 Limitations and perspectives for future research

The case studies informed the application of the reflective methodology on the practice which corroborated its design and theory. Although I consider that it proved to be a useful tool to review and examine the practice, the fact that I was able to apply it in reflective thinking during the experience does introduce a limitation of this research.

In Chapter 4 the designers interviewed said that the language barrier was one of the challenges to connecting and interacting with local artisan producer communities.

Language was not a barrier in my practice, as we all spoke Portuguese – but the reflective methodology being highly situational and requiring information about the context, it could be limited in contexts where the designer cannot engage in conversation with the community. This is clearly a limitation of this research, as it does not address the extent to which the reflective methodology would serve the designer

in this situation. What kind of observations would come of that? This application, then, could be scrutinized in future researches and practices.

9.8.1 Perspectives and invitation to engage

Perspectives for continued research include testing the reflective methodology during the practice, and applying it as a tool for practice-led research and reflective thinking. Testing this participatory approach to reflective thinking is the next step that I intend to integrate into my practice. I would also be interested in verifying the use of the reflective methodology by designers, academics, teacher and students, among other professionals working with producer community.

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Appendices

Appendix A

Questionnaire – Interview with designers

Consent form

Fashion designers with local communities

Thank you for your participation in this research. This interview aims to understand how designers have been working with local communities for the sourcing of materials or for the development of products in a more sustainable way.

Designer:

Company/Brand:

How long are you in the business?

1. The Project

Please briefly describe one project of your preference in which you interacted with a local community, group of artisans or producers according to the topics below:

1.1. Name of the project:

1.2. Where:

1.3. When:

1.4. What was the project about:

2. Motivations:

2.1. What were your motivations for participating in this project?

2.2. What do you think were the motivations of the artisans/local community?

3. Process

- 3.1. What were the key activities with this community?
- 3.2. Please list the roles you had to perform in this project:
- 3.3. How do these roles differentiate from your routine within the industry as a fashion designer? Why?
- 3.4. What were the major challenges that you faced while interacting with the community/artisans? How did you deal with these challenges?

4. Outcomes:

- 4.1. What do you consider are the major outcomes of the project for this specific community?
- 4.2. What were the major outcomes for you as a designer and your work team?
- 4.3. How do you think the interaction between you/your team and this community contributed towards their socio-cultural and environmental sustainability?
- 4.4. Was the project concluded, or is it still ongoing?
 - IF CONCLUDED: Do you know if the community keeps going forward with the economic activities and the new skills acquired, and if so how?
 - IF STILL ONGOING: Do you perceive changes in the social order that affect, for example economic, cultural, emotional, political, educational, environmental aspects?

Please, could you send me between 3 and 5 pictures to illustrate this project?

Web site:

Thank you very much again.

Fashion designers with local communities

Researcher: Flavia Amadeu

Dear _____,

I would like to invite you to participate of my PhD research at London College of Fashion. Before you decide to commit, it is important to you to understand the purpose of the research and what it will involve for you. Please read carefully this information sheet and feel free to ask any for clarifications or further information. Thank you very much.

Activity consents

- To be interviewed by the researcher through recorded conversation.
- To be photographed or to provide pictures to illustrate the interview.

Data consent

- a. I understand that the interviews and any material given (e.g.: audio visual materials) will be held, stored, used, published, presented and exhibited in the findings of this research and may be used in future research, reports, publications, presentations and exhibitions.
- b. I understand that personal details will remain strictly confidential throughout this research project, apart from specific material or knowledge of my authorship or research, in relation to which I would prefer to have my name quoted.

Statement of understanding

- a. I confirm that I have been informed and have understood the purpose of my participation in the research project described above. In addition, I have had the opportunity to consider the information, ask questions and I have these answered satisfactorily.
- b. I agree to take part of the interview and I authorize the use of my information for academic and research purpose to the project above.

Right to withdraw

- a. I understand that my participation is voluntary and that I am free to withdraw at any time without giving any reason, as well as to deny answering at any question, without any legal rights being affected.

Date: 13/12/2013	Date:
Participant's Name:	Name of Interviewer: Flavia Amadeu
Signature:	Signature:

Participant Record

A duplicate copy of the signed consent form will be given to you to keep your own records.

Contact for further information:

- Flavia Amadeu (researcher): London College of Fashion, University of the Arts London. 20 John Princes Street. Tel: 0044 (0)20 7514 9389. E-mail: f.amadeu1@arts.ac.uk
- Research supervisor: Dr Kate Fletcher, Centre for Sustainable Fashion, London College of Fashion, University of the Arts London, 20 John Princes Street, London. Tel: 0044 (0)20 75148470. E-mail: k.t.fletcher@fashion.arts.ac.uk
- Research Management and Administration. University of the Arts London, 5th Floor, Granary Building, 1 Granary Square, Kings Cross, London, N1C 4AA Tel: 0044 (0)20 7514 9389 E-mail: researchdegrees@arts.ac.uk

Appendix B

Publications

Paper

Amadeu, F. (2011). 'Creativity and Emergence of Knowledge: Intuitive practice in design and crafts'. In Punt, M. and Blassnigg, M. (eds.) Transtechnology Research – Reader 2011. Plymouth: Plymouth University: 1-10.

Creativity and Emerging Knowledge: Intuitive Practice in Design and Crafts

Flavia Amadeu



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Creativity and Emerging Knowledge: Intuitive Practice in Design and Crafts

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Abstract

This paper proceeds from the assumption that creativity and new knowledge can emerge through practical experience and intuition in design and crafts. The investigation is informed by different approaches to develop products of rubber, by a laboratory, a designer, and an artisan. The paper discusses how the material was developed in laboratory and creatively transformed into artefacts by a designer and an artisan. It will show how the flux of sensorial experience, information and sensibilities stimulates creative discoveries, pushes imagination, and impels further research with regard to the material.

Introduction

This paper will reflect on creativity and the emergence of new knowledge informed by intuitive practice in design and crafts. In order to perceive how the transformation of a material may occur from different approaches, the investigation will enlighten and relate three different perspectives of practices and material developments of natural rubber¹: (1) by a laboratory; (2) by an artisan from the Amazon Rainforest; and (3) by a designer. Through the lenses of intuition and practice this case study looks at the synergy of different perspectives, which, this paper suggests, can generate and bring to circulation new knowledge. This circulation of knowledge can be understood by the concept of *symmetry of ignorance* used in the metadesign discourse by Gerhard Fischer (2000) as an understanding that knowledge is spread and that the consideration of different point of views can catalyse further insights, ideas, and developments to a complex issue.

From this case study, the first section of this paper will refer to the material and its methods followed by the description of two parallel reports in order to investigate the nature of the creative process. The first will show the practical investigation of the author of this paper, who is a design and art researcher working in collaboration with a laboratory that develops the rubber. The second report will consider the development of artefacts by a rubber producer in the Amazon Rainforest. Following, it will bring together the approaches by both designer and artisan, who achieved in their distinct context the same method of making goods during the solidification of latex into rubber, which will be discussed here as the *integrated artefact*. Furthermore it will consider the difference of the scientists' approaches, which reveal distinct motivations in regard to the material. While the team of lab scientists focuses on the process and material properties, the other actors (designer and artisan) are driven by the idea of the artefact, which provokes a different relation with the rubber, inducing intuitive experimentation as a method of research from which new knowledge comes to light.

As such, intuition and practice can be seen as a circular generative process, which catalyses creativity. According to psychologist Gerard P. Hodgkinson *et al.* (2008, p. 4-6), "intuition can be conceptualized as one element of practical intelligence", which in their view lies beyond conscious awareness. Intuition is therefore difficult to articulate and comprises knowledge that is acquired experientially and stored tacitly. The practical intelligence, as quoted above, is one of the categories of Robert J. Sternberg's theory of intelligence, which relates creativity, practice and analysis (Hodgkinson *et al.*, 2008, p. 4-6). These three categories are basic elements of creative activity manifested in the reports of the designer and artisan related to their intuitive practices. Concerning this, this paper will draw from the understanding that the human experience, with the material, informs intuition and that intuition influences creative activity.

1. The Material

This section will give an overview of the material, which is a natural rubber of high quality that results from a simple method of processing latex. This has been proposed by the Techbor Project (*Technologies for the production of the natural rubber and artefacts from the Amazon Rainforest*) and developed by the Chemical Technology Laboratory from the University of Brasilia (Lateq/UnB). The technology of production has been adopted by rubber communities spread throughout the Amazon Rainforest since 1997 as it provides a better economic return,² and dispenses with the processing plant as an intermediary between producers and industry (Floriano Pastore & Nilso José Pierozan, 2007).³ According to this method, two different kinds of rubber sheets can be produced: the Liquid Smoked Sheet – LSS⁴, which constitutes a non-vulcanised rubber, free of pigments or additives, ideal for industry; and the Semi Artefact Sheet – SAS that is vulcanised, considered a technical rubber, coloured and ideal for making goods. The idea that the rubber sheets could be transformed into artefacts led the laboratory team to develop the SAS as a ready-to-use surface, initially with no other practical application than to make computer mouse pads. The two following reports will demonstrate how the free investigation of this material by a designer and an artisan changed the nature of research by the scientists, adding new knowledge and reflecting back on their routine with the chemical process. The opportunity for creativity through free investigation of the material by these two non-specialists in chemistry had as a consequence, the development of unpredictable ways of manipulating with the SAS rubber. The transference of technology between the different actors became a loop, as the knowledge was transformed generating new demands of developments and new methods, which fed back into the lab team for their continuing investigations.

In this way, both designer and artisan, driven by the intention of creating products, achieved two different methods and results with the rubber, which will be discussed in the next sections as *integrated artefact* and *independent artefact*. The *integrated artefact* is a particular method of working with the SAS mix, while the latex is still fresh, during its transformation into rubber. This technique increases the possibilities of creative manipulation of the material, enabling for example, moulding it into different forms, joining parts and different colours, building structures with no need of other materials, and drawing and making textures, which results in an *integrated artefact*.

Since the rubber communities have an abundance of fresh latex in the forest, the *integrated artefact* appears as an advantageous process, and represents a range of new possibilities for developing creative capabilities in local bases.

On the other hand, products made of an independent use of the ready-to-use rubber sheets, are entitled here as *independent artefact*. The SAS is a material available for designers and artisans who do not live in a rubber community, or work in the laboratory. The first report will also describe the designer's engagement with the SAS for making *independent artefacts*. The *integrated artefact* unforeseen by the scientists came forth as a genuine solution for making products, which take advantage of the inherent properties of the wet rubber in process. While the *independent artefact* fed back the necessity of improving some aspects of the ready-to-use rubber sheets, which was also taken as a contribution and issue for the research in the lab. Fisher (2000, p. 528), rather then considering the asymmetry of knowledge between agents, takes account of the *symmetry of ignorance*, where new knowledge can emerge from the collaboration between different expertise, experiences and perspectives: "the *symmetry of ignorance* requires creating spaces and places that serve as boundary objects where different cultures can meet". The circulation of new findings of other perceptions, findings and problems regarding the material and its process seems to have favoured creativity on both sides, opening a collaborative space between science and product creators (art, craft, design), feeding the inventive practice with this material.

2. Designing From Rubber Properties

This section will outline the investigation of the material by the author, who is a designer, who undertook extensive research with the material and developed both *integrated artefacts* and *independent artefacts*. The first period of working with the rubber began in the laboratory on the campus of University of Brasília, Brazil, which simulates the work spot implemented in the rainforest for facilitating the rubber sheets production and storage. It was 2004 and Tecbor were already recognised by the innovation with rubber, and some communities in the Amazon already produced the Liquid Smoked Sheet – LSS and the Semi Artefact Sheet – SAS. This six-month period researching the material in the lab was followed by a second period of exploring the ready-to-use sheets, extending the work of the designer with rubber for a long-term perspective.

2.1. Developing the integrated artefact

The author's journey with rubber began there with an invitation for participating in an art project for an exhibition in *Artificial Emotion Exhibition* in Itá Cultural, an art centre based in São Paulo, Brazil, in 2004. She was asked to design a 2m² rubber membrane for the installation 'Responsive Membrane' of the artist Tania Fraga³. The rubber membrane responded to public interaction via a virtual interface with waved movement. An intuitive process led the designer to make decisions about how to construct the membrane, from this emerged the *integrated artefact* process that emerged as a solution for this installation. The development of this method allowed the composition of the membrane with coloured drawn textures translating the artists' ideas.

According to Fischer (2000, p. 530), "the ability to interact with the problem at hand and to have that situation 'talk back' is a crucial mode of design". The intensive period in the lab shed was of abundance of fresh latex and freedom to discover how to work with the rubber, which enabled an intuitive practice and further conversations with the material, beyond the scope of the artistic project. About the same time, a rubber producer was developing an *integrated artefact* from the same rubber source in the rainforest in order to develop shoes, as will be described in section 3.

2.2. Developing the Independent Artefact

A second phase of practical investigation followed with the ready-to-use sheets as raw material, which became identified as the *independent artefact*. Extensive research was made with the sheets in order to develop design products, again an intuitive approach to discover how to deal with a peculiar material that could not be glued, sewn or joined to most materials, did not match with most of metals, among other complications that made the material tough to work. Exhaustive trials were made in order to learn how to deal with its capacities and limitations.

Moreover, obstacles regarding the constituency of the material, which did not represent a problem for the art piece, arose in designing potential objects for peoples' daily lives. These were, for example, the strong smell, its instability, and the whitening of the rubber surface. This feedback and exchange with the lab team contributed to a growth of the connection between our performances, as the problems became part of their research resulting today in a better technology that has also been transferred for the communities. Collaborations can take different forms and be more than the exchange information. It seems that it is fundamental to bring sensibilities into circulation, in order to share tacit knowledge as well and to integrate different perspectives.

The difficulty of working with the dried material suddenly became a potential for realising that the best use of it would come from the valorisation of its intrinsic characteristics, such as resistance, flexibility, malleability, colours and textures. This insight gave birth to the 'Organic Jewellery', an authorial work that comprises a collection of contemporary jewellerys made with minimum interference of other materials. The pieces constitute flat shapes that acquire volume on the body, which affords them. The 'Organic Jewellery' was further improved along the years as well in terms of process and finishing. New issues were brought for the chemistries in the lab to solve, and for the designer as well. The jewellery's commercialisation had different responses; one of them was the promotion the Tecbor Project and the increasing demand of rubber by other designers and artists.

The 'Organic Jewellery' holds this history materialised in transformable shapes, playful, elastic pieces that invite the discovery of different ways to wear them, the pieces are malleable and adapt to different bodies. The understanding of the materiality of the rubber was the outcome of not just the ability to interact with a material to solve a practical problem, but more a culmination of an intuitive practice. The immaterial engagement through sensorial and emotional interaction with the material revealed unexpected complexities, validated as new knowledge and transformed into pieces of art and design.



Fig. 1. Organic Jewellery: Zig Zag Armband and Set of Necklaces. Flávia Amadeu, Brasília, Brazil, 2007.

3. From Tradition to Novelty

This second report will bring the experience of Doutor da Borracha⁶, a rubber producer and descendant from generations of *seringueiros*⁷, who revealed his creative capacity when made aware of the new rubber. His history changed in 2003 when the Tecbor Project was implemented in Assis Brasil, Acre, Brazil as an effort of the local council to skirt the low competitiveness of the natural rubber, incentivising the continuation of the latex production in the Chico Mendes extractive reserves⁸ through the production of a more lucrative rubber. The Liquid Smoked Sheet (LSS) and Semi Artefact Sheet (SAS) have brought new demands, which have been growing during the subsequent years.

Doutor da Borracha embraced the SAS beyond meeting demands, when he began to test the application of the material for making shoes. However, he could not simply transfer the old technique to the new material, due to the different way of processing the latex. The old technique of manufacturing rubber boots is a tradition among rubber producers, as the material provides appropriate resistance and safety for walking in the forest, although being a non-technical rubber, which is unstable to temperature changes, and deforms with use. The boots result from smoking layers of latex around a wooden foot form. The technique of laminated shoes has been related to the time of colonisation that some indigenous people covered their feet with rubber layers and that Europeans learned in the Amazon how to waterproof their shoes by submerging them into latex (Loadman, 2005).

Nevertheless, as the material was very different, he had to develop a new method of making shoes. His involvement with the material guided by his intention to make rubber shoes gave birth to the *integrated artefact* of SAS, as described in sections 1 and 2. This genuine method cannot be made by industry, as it takes advantage of the fresh latex in the coagulation process. In this creative appropriation of the material, he discovered the possibility of developing different models of shoes and many other objects. Moreover the shoes made of SAS had a better quality than the traditional black laminated boots, they were stable and could be made in varied colours and shapes. The discovery of the *integrated artefact* by this *seringueiro* represents a technological

innovation that enables him to amplify the productive and creative capacity. Moreover he adapts the chemical composition of the SAS - Semi Artefact Sheet to alter drying times. His profound knowledge of nature also contributes to his expertise with the rubber, which is revealed in his remarks about the variation of latex coagulation according to the weather or period of the year, whether the trees flourish or not. More intuitive observations by him also come to the surface when he says that feelings of anxiety may disturb the coagulation of the latex, even harm the liquid. Intuition and practical knowledge become apparent not just in his artefacts, but also in the alchemy he controls the material.



Fig. 2. The *integrated artefact*: latex collecting, preparing the mix for Semi Artefact Sheet, assembling a shoe, rubber shoes. Doutor da Borracha, Assis Brasil, Acre, Brazil, 2011.

Throughout the years Doutor da Borracha acquired autonomy in his work. This rubber producer and artisan stands out among the other rubber producers, as his inventiveness and ability gave him an independence from the industrial demand, and in addition a better economical return. But more than material return, the immaterial value comprises the recognition for his work in his village, primarily, and also outside. A further consequence is the reforestation of part of his land since the forest that was previously cleaned for cattle farming. As well as making shoes independently, he taught members of his family and from the village, who since then have been working as a collective in crafting shoes and have been creatively inventing new models. These shoes have been bringing recognition to the rubber community of Assis Brasil. They foreground the collective nature of crafts, which Octavio Paz (1987, p. 60) evaluates:

The personal sensibility and imagination divert the object from its ordinary function and create a break in its meaning... this diversion and break link the object to other realm of sensibility: imagination. This imagination is social: [the new shoes] are also metaphorical sun shared with everyone. In its perpetual movement back and forth between beauty and utility, pleasure and service, the work of craftsmanship teach us lessons about sociability. ... If festa is participation in primordial time – the collectivity literally shares out among its members, like sacred bread, the date being commemorated – craftsmanship is a sort of festa of the object: it transforms a utensil into a sign of participation.

This case shows how a new material (SAS) was adopted, transformed creatively and integrated to the practical and tacit knowledge of local crafts processes. It also shows how sophisticated knowledge about nature, memory and tradition influenced his inventiveness manifested through an intuitive practice, sensible to his environment, where disciplinary boundaries do not exist.

4. Creativity and Intuition

The two reports above show the parallel transformation of a material by the author and by a rubber tapper. In both cases the creative process emerged from a conjunction of tacit knowledge, memory, learning process, and the free experimentation guided by intuition and decision-making. Giaccardi & Candy (2009, p. 194) describe how materiality is connected to memory and imagination, whilst the sensory experience informs memory, the physicality of the material in turn, influences the creative cognition through the creative practice. The practice seems fundamental to enable intuition to guide the creative emergence, as a circular process that galvanizes the material process. In this, intuition appears as the necessary stimulus for impelling creativity, which reflects in return on the practice, provoking change.

The first stages of the author's work in the lab involved a rather intuitive experimenting with the rubber in a process of discovery through a sensorial engagement with the material, without knowing the end result. The analytical perception and decision-making were defined during this practical approach, which resulted in the rubber mantle of the 'Responsive Membrane' and the 'Organic Jewellery' collection, among other products. In the second case, Doutor da Borracha became a recognised artisan through the use of tacit knowledge originating from generations of doing shoes. It was probably an ability transferred through intuition, practice and analysis of a new material, in a process he had to innovate. This shows that the use of the new technology was not merely passively accepted by the producers, but appropriated and transformed.

Although the development of the same process by designer and artisan, the emergence of the *integrated artefact* was different in each case; in the first for developing textures and drawings in different colours and volumes, in the second to build a structure evident in the shoes. The motivation through which this practice is led appears also to determine the decision-making. It is also noticed that both cases realised opportunities offered by the intrinsic qualities of the rubber, an insight clearly derived from experimentation. According to Hodgkinson *et al.* (2008, p. 8) "acquired abilities enable individuals to perform particular tasks, whereas cognitive styles control the ways in which those tasks are performed". It can be concluded that intuition may be

involved in the early stages of the creative process by providing somatic signals for or against a course of action.

The paper brought together designer and artisan in their motivation for developing products, which was discussed as *artefact oriented process*, while the motivations of the lab team focused in the process and qualities of the rubber sheets. The divergence of different motivations catalysed unexpected insights and experiences, which provoked conversations between the different agents of the case study. The concept of *symmetry of ignorance*, where different perspectives are considered, has driven a synergy between them. The circulation of information and sensibilities, validated creative discoveries, pushed imagination, and impelled further research with regard to the material. The creative transformation of the material into artefacts seems to have been guided by the constant conversation between intuitions and practice guided by specific motivations and informed by the properties of the material as sensorially experienced.

Notes

¹ The rubber is considered natural for processing from latex.

² This footnote will give a brief history about the natural rubber in the Amazon rainforest. Rubber is an ancient technology developed by South American and Central American people who were met by the colonisers in the 16th century. The natural rubber comes from the latex produced by the rubber tree *Hevea brasiliensis*, a crucial raw material largely explored in the industrial revolution times and during World War II. Both periods provoked large immigration from people from other areas from Brazil to the forest, who were exploited, enslaved and abandoned in the end of the economical booms. The natural selection and the learning of living in harmony with the nature, gave birth to generations of independent tappers which lived in relative balance with the environment, extracting value from the forest without devastating it (Andrew Revkin, 1990, p. 61). The awareness about their environmental importance added to socio-political engagement and impelled rubber community associations and local councils to seek for alternatives for the continuation of rubber culture, as the rubber produced by them had no competitiveness anymore. From the early 70s there was an invasion of land speculators and cattle-ranches in the rain forest, which derived in a series of conflicts involving rubber producers, nut collectors, fishermen, indigenous, among other producers from the forest, which became defenders of the native resources, flora and fauna, embodying the ecological label to their political identities (Revkin, 1990, p. 76-77; Anthony L. Hall, 1997, p. 96-97; Débora Lima & Jorge Pozzobon, 2005, p. 1). In the end of the 1980s the battle against ranchers culminated in the demarcation of large protect areas of forest named extractive reserves, where economical and non-economic incentives for a non-destructive use of natural resources became regularised and viable. However, at the same period, governmental subsidies for domestic rubber were gradually withdrawn in contrast with the encouragement for opening competitiveness with the cheaper external rubber market (Hall, 1997, p. 115-116). Indeed the wild Amazonian rubber has no competitiveness in relation with big plantations from Malaysia and São Paulo, a picture that has provoked increasing poverty and exodus of rubber producers for big centres. During the 1990s the Brazilian government incentivised the familiar productions in all the country for social innovation, which made possible the development of a series of projects between society, universities and government.

³ The simple technique of processing rubber, which wastes no electricity and uses small amount of water, has been provoking some social changes such as including women in the production and the development of artefacts. Moreover as the smoking is eliminated of the coagulation process, the production becomes non-toxic and non-pollutant as before. The economic return is three times more than the old rubbers. Different communities from the Amazon Rainforest counties have adopted Tecbor. The technique is taught through communitarian courses, a working shed is installed near the *seringueiro's* house to facilitate the manufacture and adequate storage of rubber and the necessary materials are provided. The continuity of rubber production means also preservation of genetic natural resources, deep knowledge about nature and local cultures (Pastore & Pierozan, 2007).

⁴ LSS in Portuguese is FDL – Folha de Defumação Líquida and SAS in Portuguese is FSA – Folha Semi-Artefato.

⁵ <http://taniafraga.art.br/2011/09/14/membrana-estimulavel-responsive-membrane/>

⁶ Doutor da Borracha is the cognomen of José Rodrigues de Araújo, who has the nickname of Doutor since childhood and added Borracha when became known by his shoes of SAS. Doutor da Borracha means Doctor of Rubber.

⁷ *Seringueiro* is the Portuguese name given for rubber tapper, the person who collects the latex from the trees and produce rubber.

⁸ The extractive reserve of Chico Mendes was demarcated by the Federal Govern of Brazil in 1990 and comprehends a large protected area of Amazon Rainforest in the Acre County; it represents a conquest of the rubber tappers' socio-political movement. The extractive reserves must follow a model that aims at guaranteeing the natural resources preservation and the economical production of people from the forest, such as nut collectors and rubber tappers.

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FROM WITHIN TO BEYOND THE ARTEFACTS

Design practice within rubber tapping communities from the Amazon Rainforest

How to analyse and evaluate design practice within local communities?

How can design practice within communities contribute to amplify social and environmental sustainability?

Keywords

socio innovation
creative appropriation
resilience

Case studies

Communities of rubber production and rubber artefacts from the Amazon Rainforest

Objectives of the research

To develop a better understanding of the design practice within community context;

To develop methods of analysis and evaluation of the design practice within communities of production (raw materials and crafted artefacts);

To perceive practical implications of the design interaction within communities.

Designer's roles

project consultant
activist
facilitator
collaborator / peer
catalyst



Objectives of the field work

To participate of the productive process;

To facilitate the introduction of a new method of doing rubber;

To perceive the creative appropriation of the new material into artefacts, which comprises tacit knowledge, memory and tradition, besides the sensorial aspects of the material.

Principles for a sustainable design practice within local communities

1. Constellation or Network of Relations
2. Diversity and Conviviality
3. Stories and Narratives
4. Turning Points
5. Creative Appropriation
6. Resilience and Autonomy



"What lies 'beyond' representation is found 'within' it. (...) it leads us to ask not merely what these forms mean, but what they do in a network of social relations. This is what collaborators talk about: the capacity of their work to intervene in pressing social, environmental and political debates; not directly, at the expense of the material resistance the work embodies, but indirectly, through material thinking." Paul Carter, 2007, p.12.

Participatory activity within community

Reflective practice based on Field Work (2011) and Professional Practice (2012)

Preparation

Duration

Immediate Results

Resilience



Supervisors

Kate Fletcher (director of studies), Professor Sandy Black, Dilys Williams

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5. **Behind the scenes: producing Lily Cole's jewellery range**

Behind the scenes: producing Lily Cole's jewellery range

Wed 05 Jun 2013 [Add a comment \(#comments\)](#)

Last November, design consultant Flavia Amadeu spent 10 days living in the remote rainforest community of Parque das Ciganas, working with rubber tappers to create Lily Cole's Wild Rubber Collection. In this blog, she gives us the inside story of the sustainable process behind this beautiful new jewellery range.



Step 1 – Getting organised

On 5 November, I travelled from Brazil's capital, Brasília to the remote rainforest community of Parque das Ciganas in the Sky rainforest Rescue project area in Acre state. My travel companion was Vanda, a chemistry researcher from the Brasília-based lab, Lateq, which has developed the technology used to make the rubber in Lily's jewellery. It's a long journey that took us first to the capital of Acre state, Rio Branco, and then to the small town of Feijó. Here we met local field technician, Mr. Tabota who helped us set up all the materials, food and tools needed for our training course with the local rubber tappers.

Once arrived in Parque das Ciganas, we were welcomed by the families who would be involved in the training and production, with whom we discussed the project. Naturally men and women assumed their roles, which comprised tapping the trees, organising the work space and producing the rubber sheets that would eventually be cut into the shapes that now form part of Lily's jewellery collection.

Step 2 - Training and Production



The training and the production of the rubber happened in a lovely

atmosphere and with incredible dedication of all the community members. During the two week training we produced 300 rubber sheets - a very good amount for a first batch!

The rubber is processed by mixing natural latex from the trees with water, colours and coagulantss, then the mixture rests until it solidifies. The rubber is then passed through a simple hand-powered press to drain the water, before being hung up to dry. During the training we also tested new pigments to achieve the pastel colours we wanted for the jewellery collection.

I also showed local women how to make handicrafts with the wet rubber. Especially Iris and Andreia were enthusiastic about it and immediately began to create items from their ideas.

Step 3 – Back to the community

Two weeks after the training I returned to the community and felt gratified to see how the families were getting on producing rubber on their own. It was an adventure to get there as it rained a lot I had to travel by boat (the roads get completely flooded in the rainy season and no vehicles can get through the thick mud). On the way Iris was radiant with the quality of her rubber sheets, with the amount produced and the new colours that she explored.

We were up at 5 am for an intense day of work, starting with a quality control of the rubber sheets. We also weighed all the sheets, washed the materials and began producing more rubber in the afternoon, to meet the full order for Lily's jewellery – 400 sheets.



Lily Cole joined us two days later, when she learnt how to do the rubber sheets with Andreia and Iris. She definitely got engaged with the jewellery project from the raw material to the final design.

Step 4 – New opportunities

While producing the raw material for Lily's jewellery, I was impressed by the creativity of the local women and children. Madalena, who was a very shy woman I'd rarely heard speaking, crafted a bag, some flowers, a tree and some wristbands.

Another woman, Aninha also surprised me recycling some rubber sheets discarded from the quality control. She was really focused on cutting the rubber delicately to make wristbands while the children looked on, enchanted. Her older boy Gustavo made a rubber cuff. I was quite impressed and let it flow without interfering in their creative process. In order to encourage them even more I gave some tools and materials such as earring fittings, threads, pliers and stylus. The women were already planning to sell this product in the local fairs in a near future.

Step 5 – Jewellery development



Back to Brasília with the rubber sheets I met some artisans who did diverse tests with the rubber in order to develop Lily's ideas for the jewellery collection, such as embroidering, threading, and weaving, in addition to working with a goldsmith to do the first prototypes.

The development of the jewellery collection also comprised an extensive research of other materials to be combined with the rubber in order to ensure the use of environmentally and socially responsible material.

Much more than a jewellery collection

The experience of living within the community for an intense 10 days gives a holistic sense of the Sky

Rainforest Rescue fashion project. The result is indeed much more than the jewellery collection, as supporting the lifestyle of the rubber tappers means also to preserve the Amazon rainforest. It is amazing to see their harmonic interdependence with nature and how the wild rubber has a fundamental role on this.

I have been working with the coloured rubber since 2004 and being involved in such a beautiful project is like a dream come true. Personally it was such a joy to work in the sourcing of the rubber with the producers in the community and especially to see how they embraced the innovation of the coloured rubber with enthusiasm and developed creatively their own rubber artefacts. In the end of my stay there, the families showed great satisfaction of being part of this project and manifested their interest in having further buyers. This project with the rubber from Parque das Ciganas has been the first one of many others and I visualise a future in which they can also make a living from their own handcrafted rubber products.

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